

FIG. 1

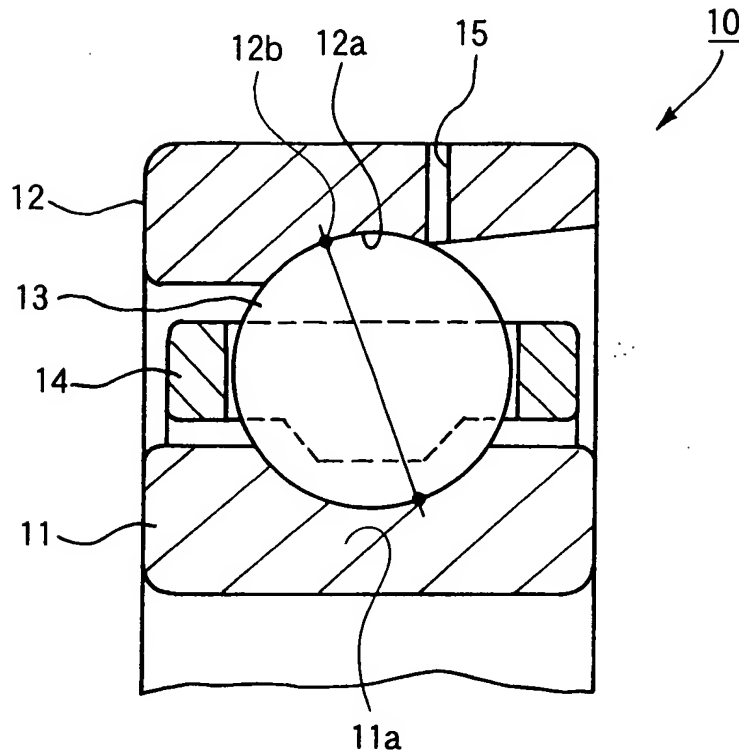


FIG. 2

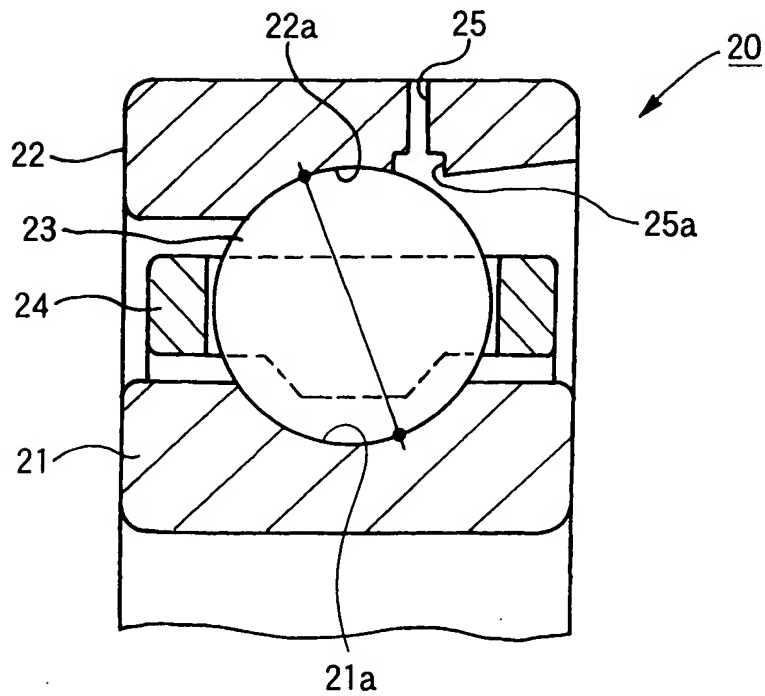


FIG. 3

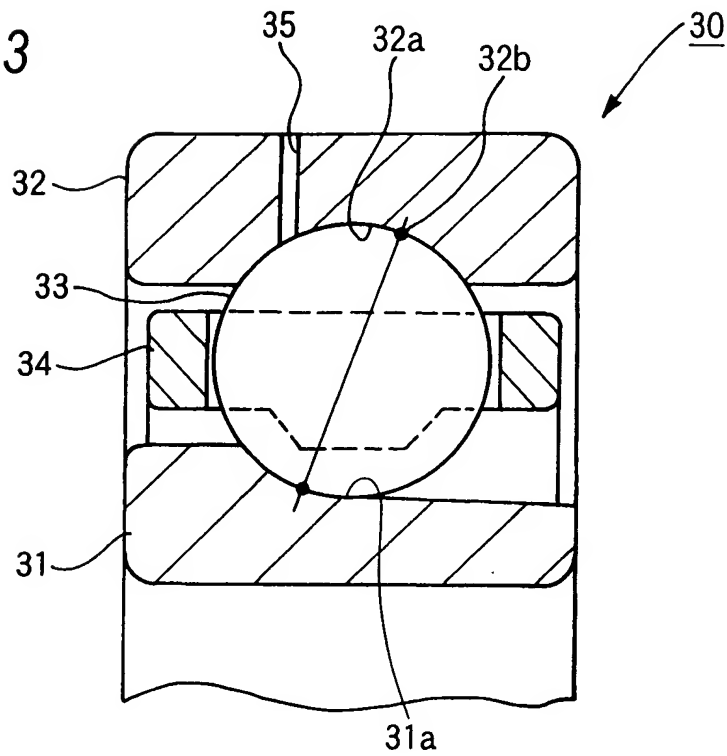


FIG. 4

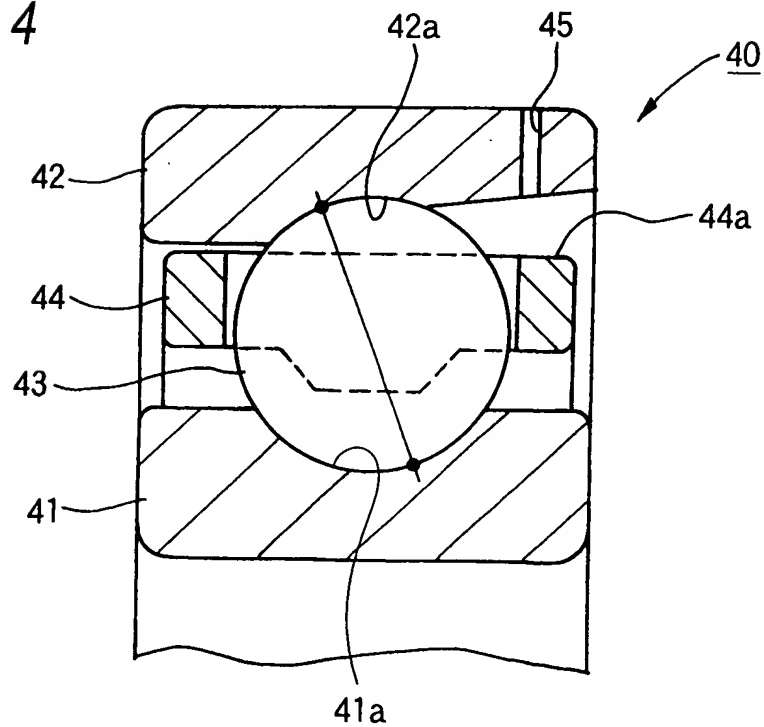


FIG. 5

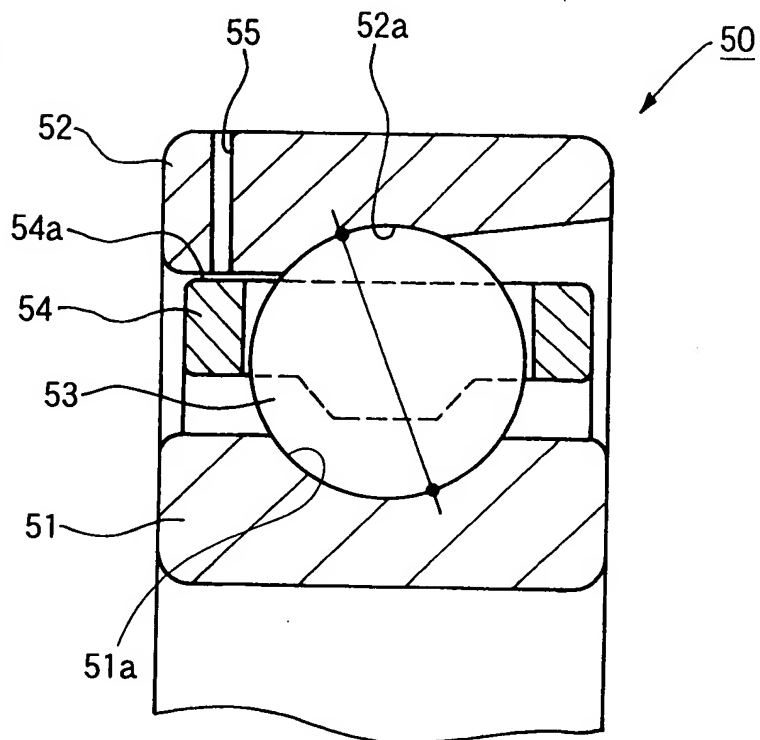


FIG. 6

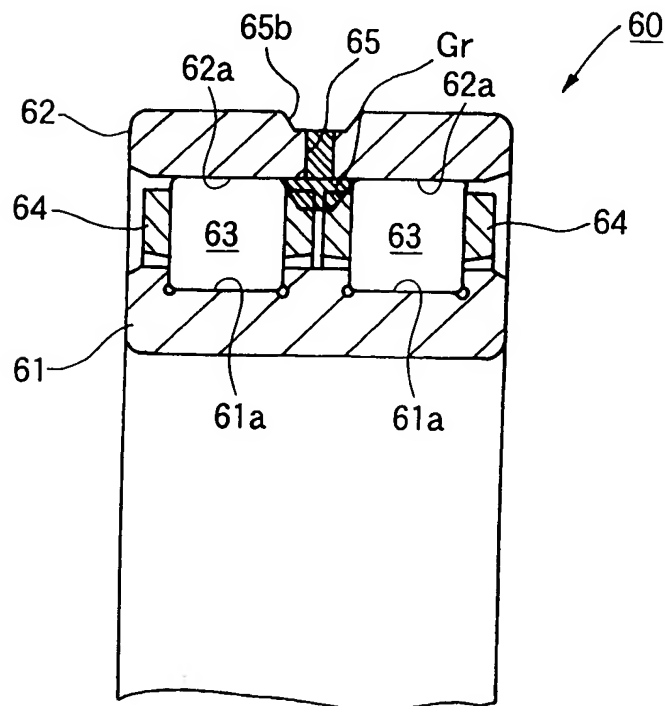


FIG. 7

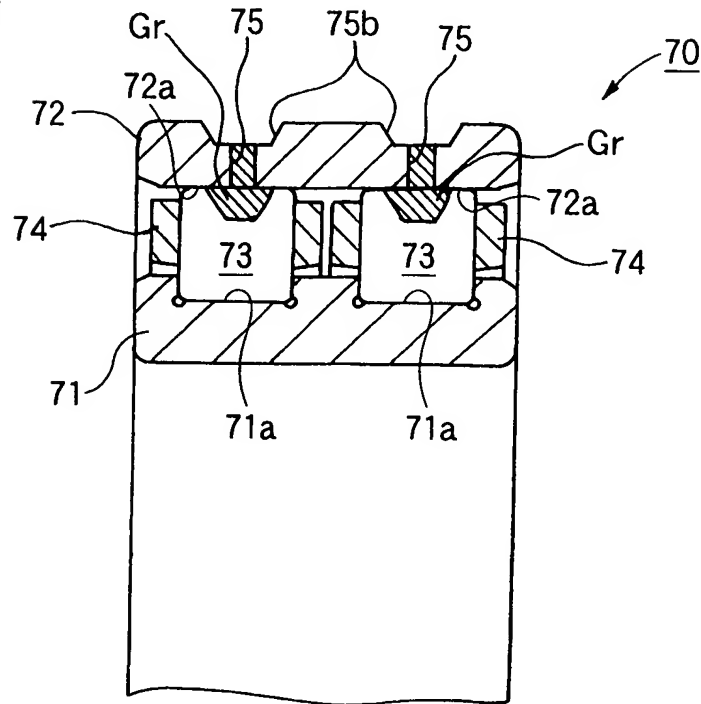


FIG. 8

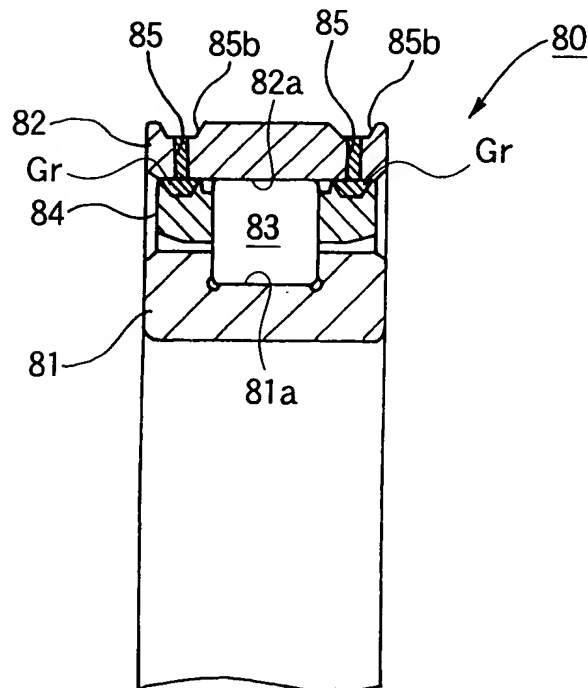


FIG. 9

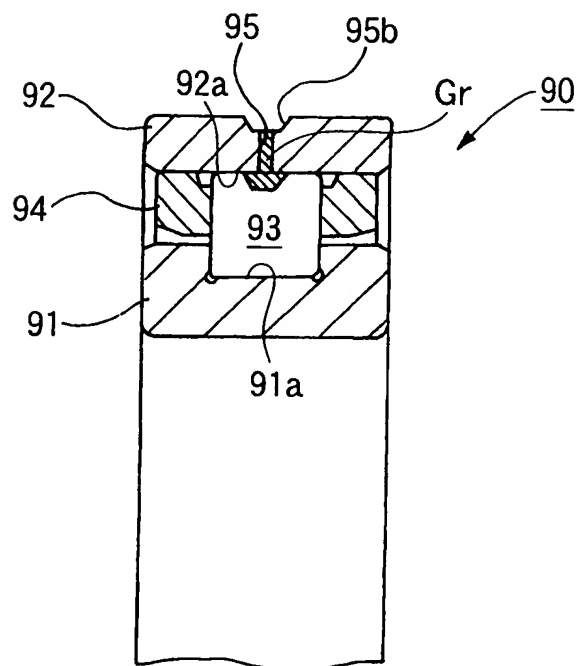
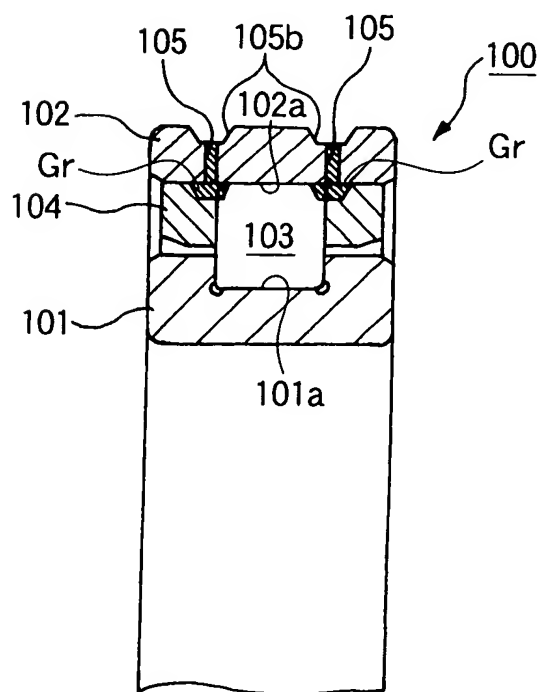


FIG. 10



A cross-sectional view of a semiconductor device 110. The device consists of a substrate 111 with a lower layer 111a. A central region 113 is formed within the substrate, containing a core 114. This central region is surrounded by a layer 112, which is further enclosed by a layer 115. A top layer 260 is positioned above the central region 113, with a contact point 112a connecting it to the central region. A label 'Gr' points to the side of the central region 113.

FIG. 13

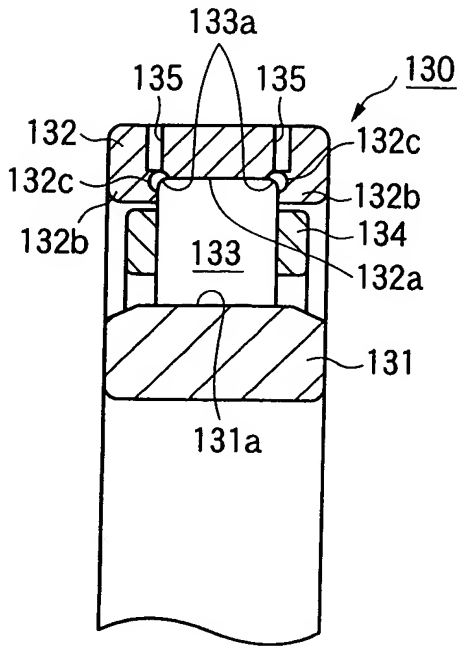


FIG. 14

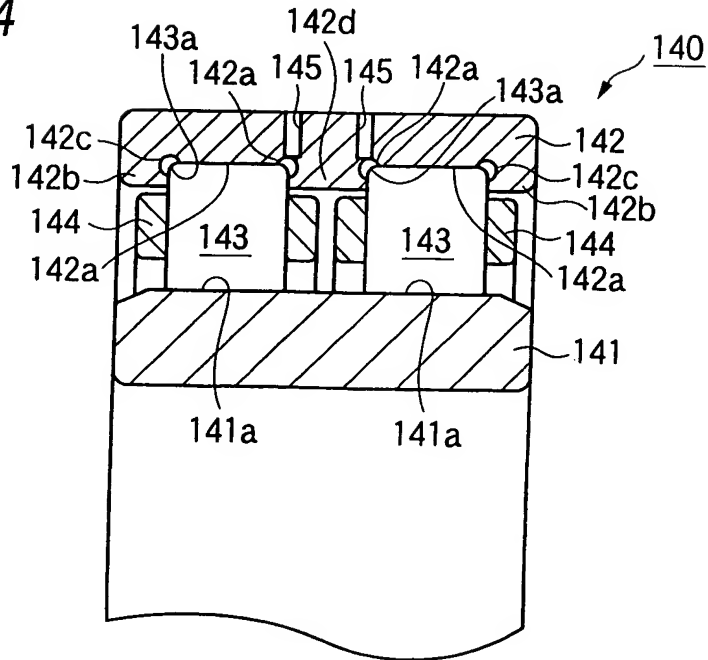
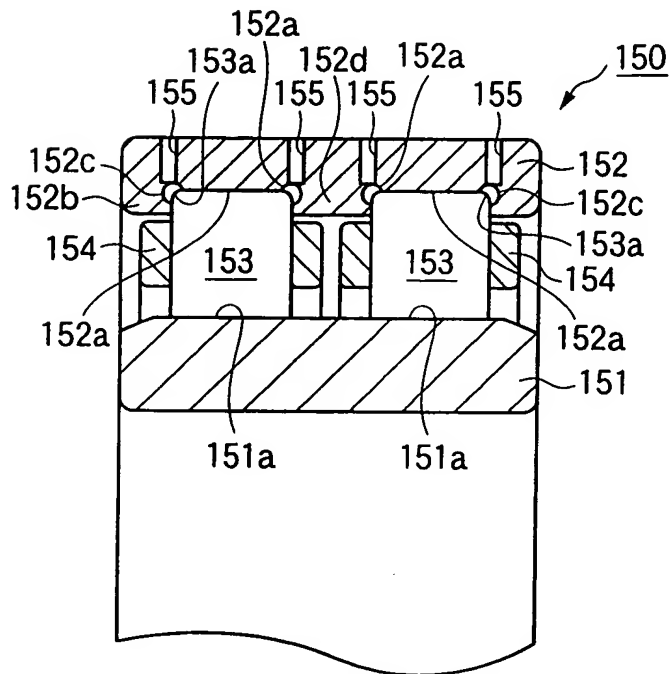


FIG. 15



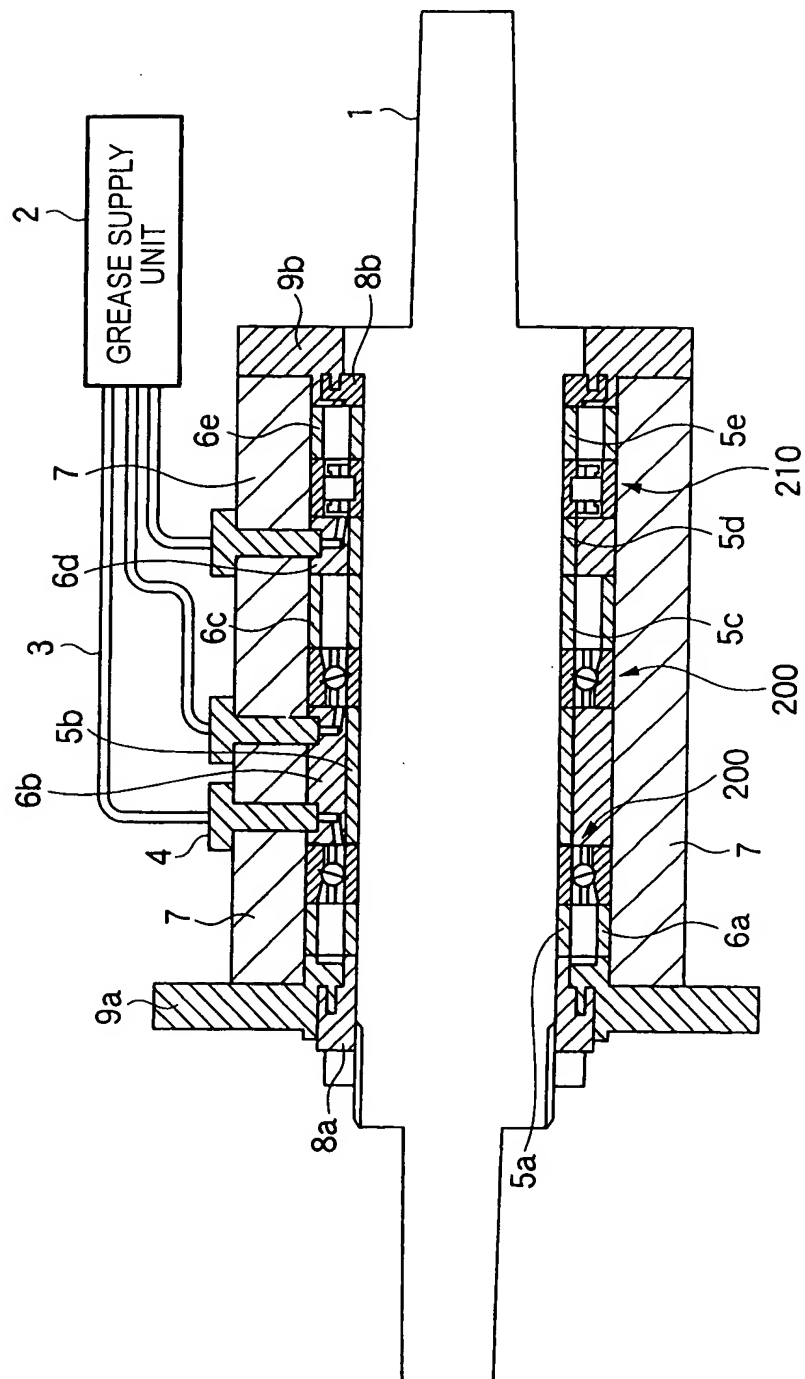


FIG. 18

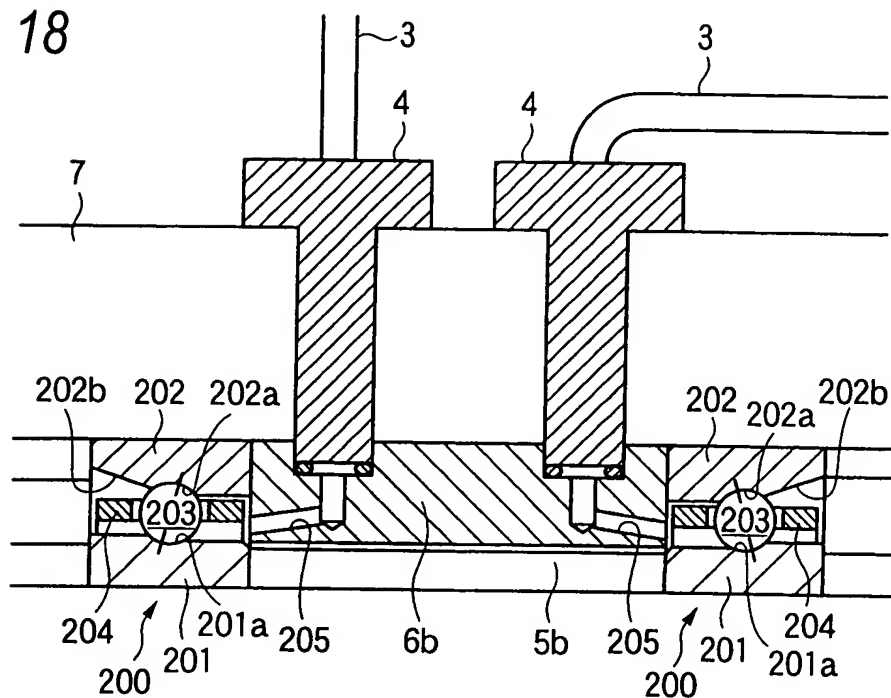


FIG. 19

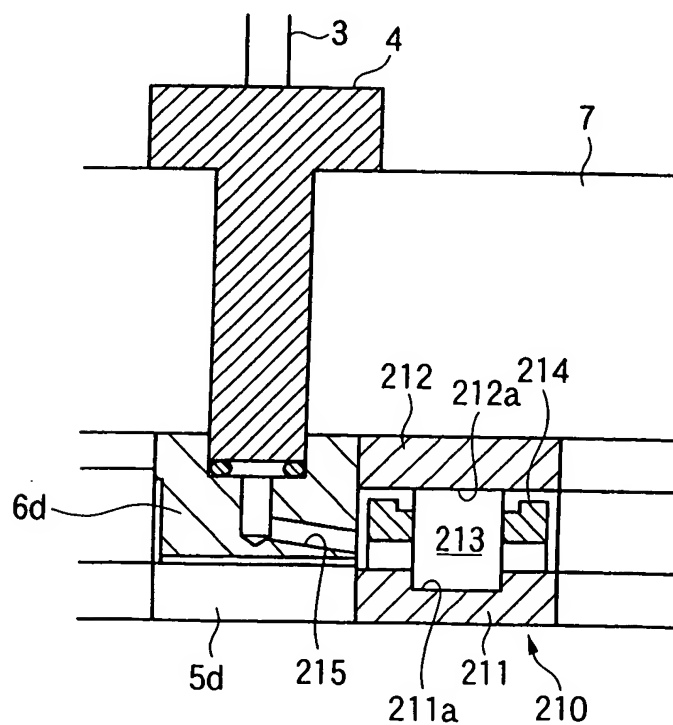


FIG. 20

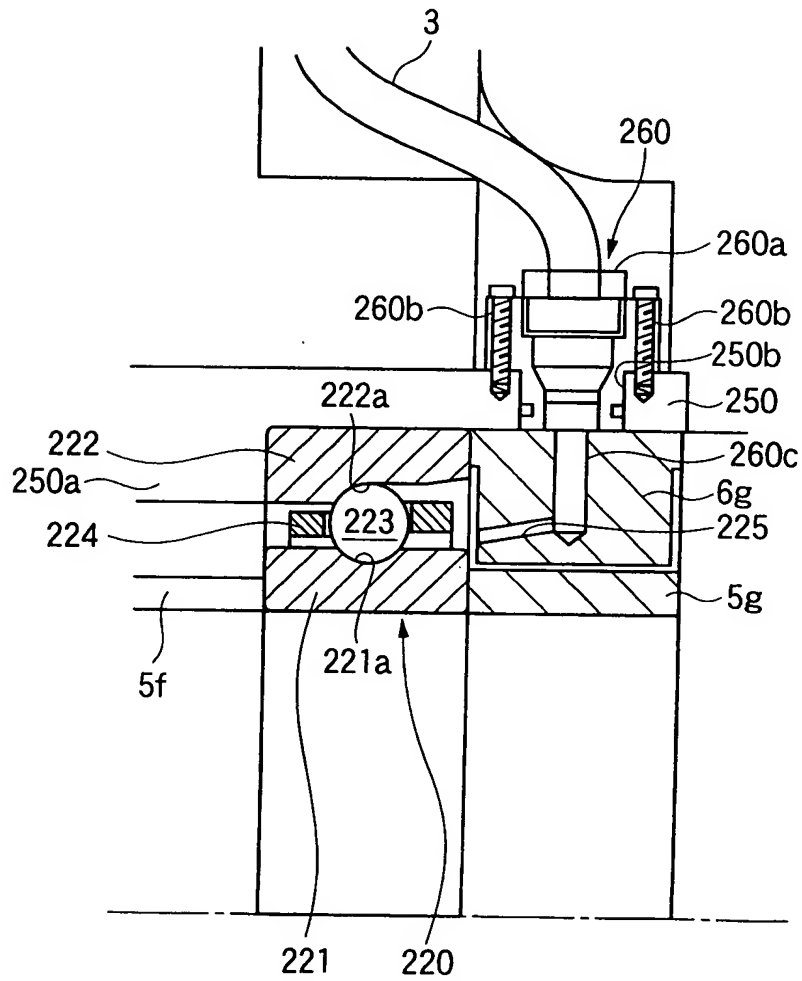


FIG. 21

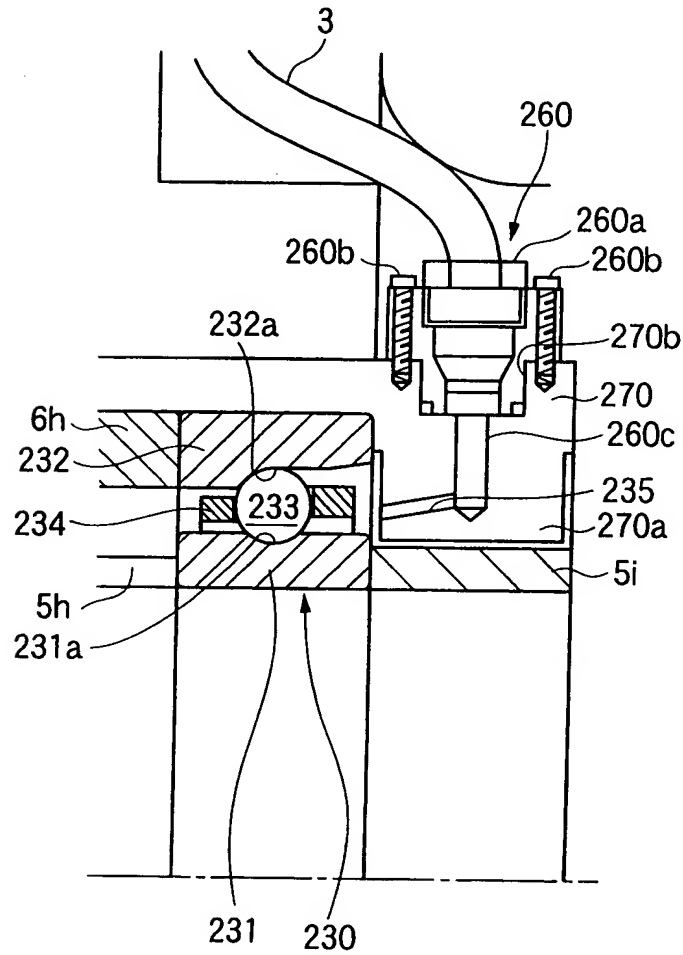


FIG. 22

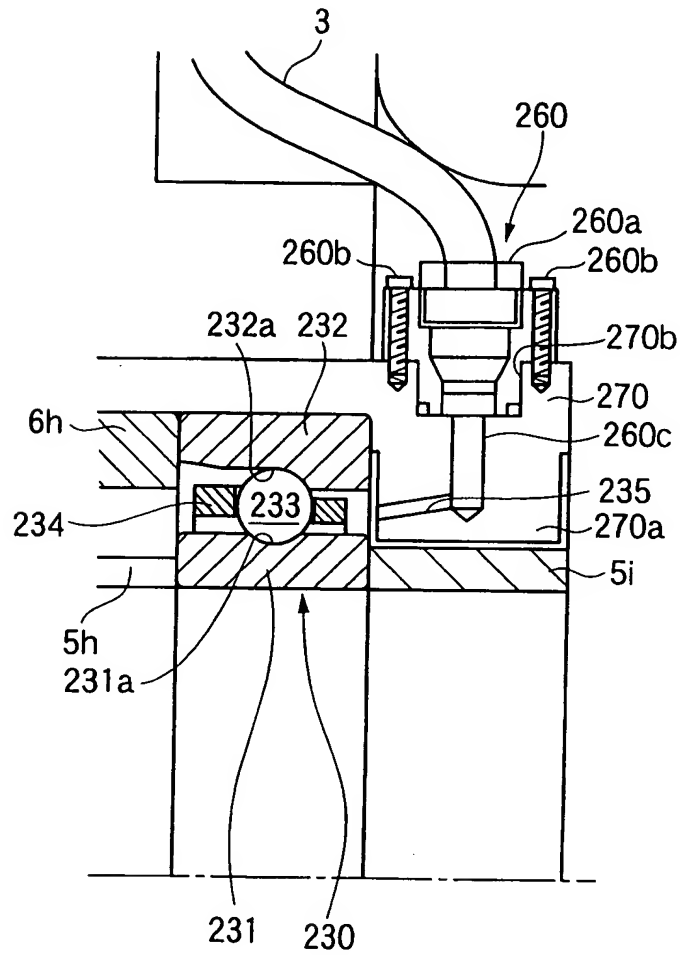
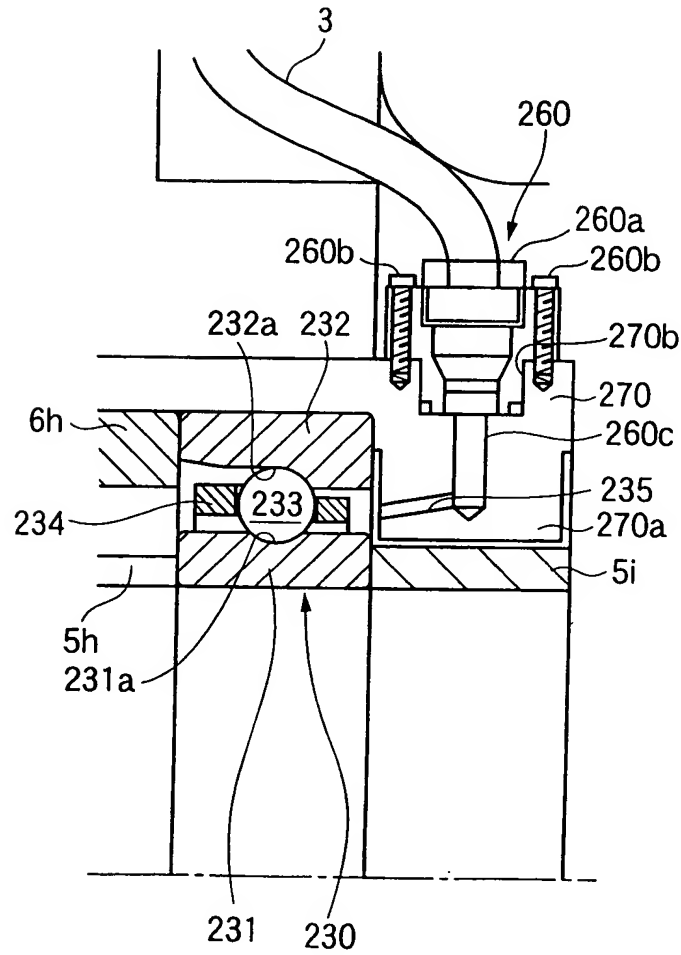
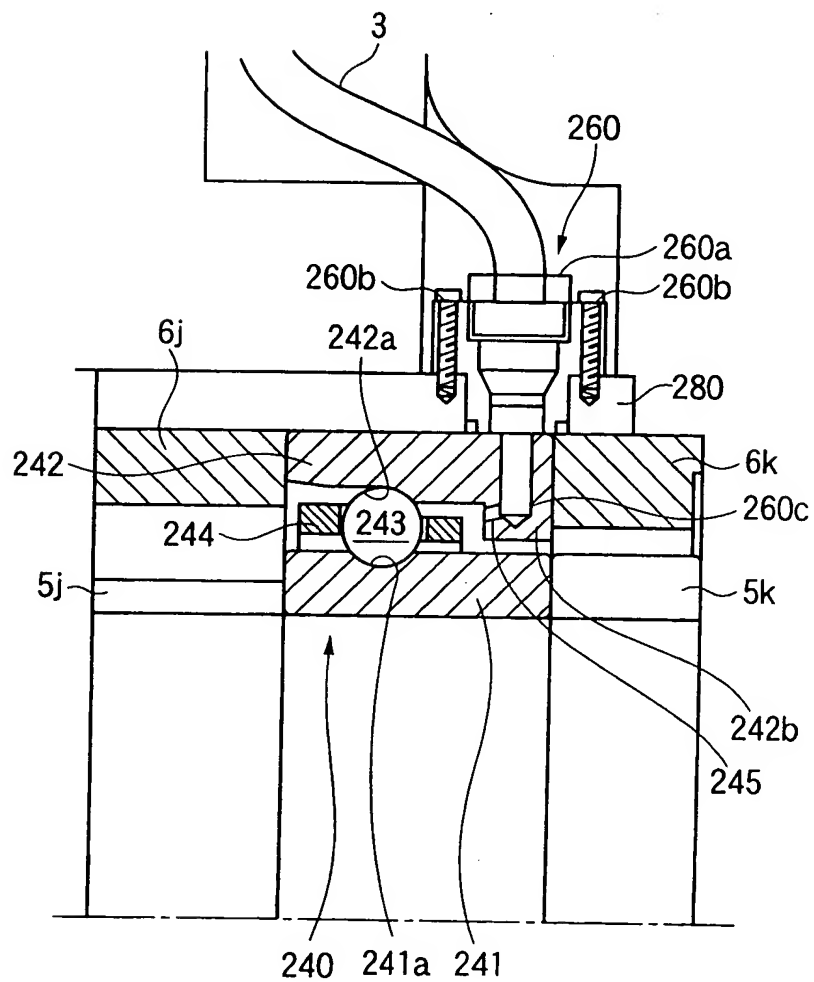


FIG. 23





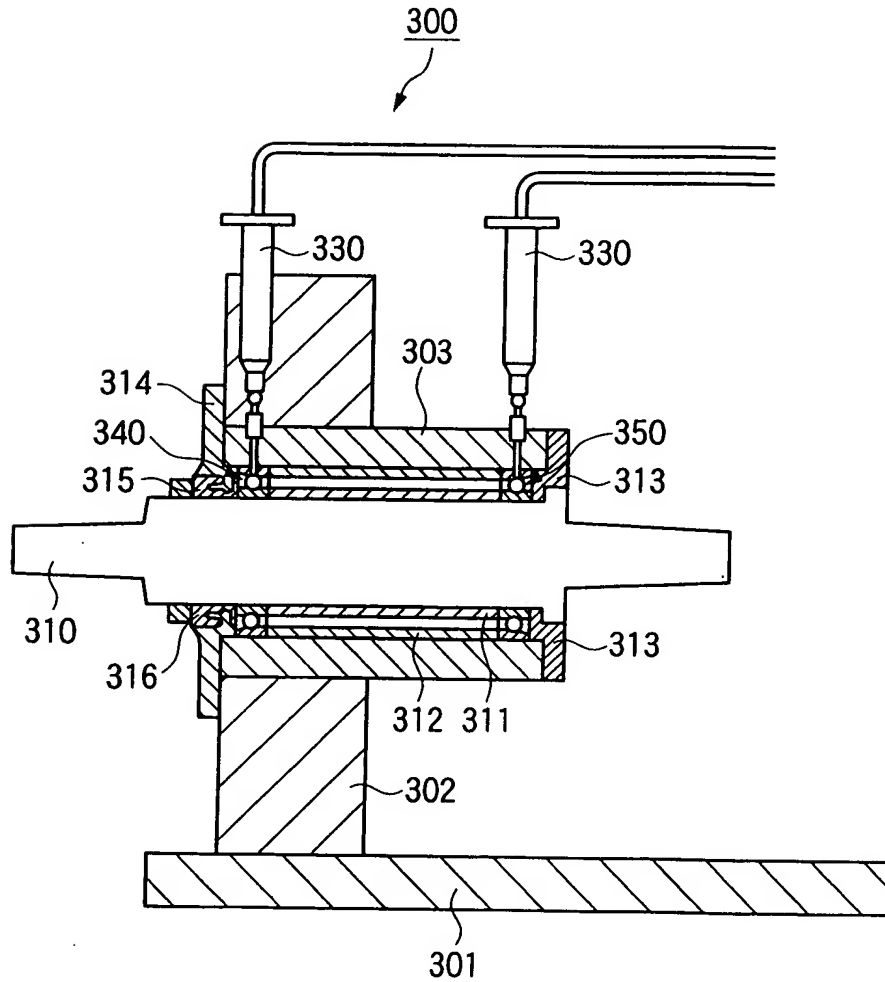


FIG. 26 (a)

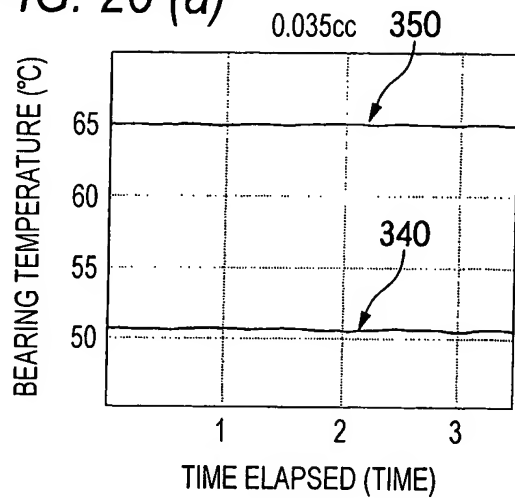


FIG. 26 (b)

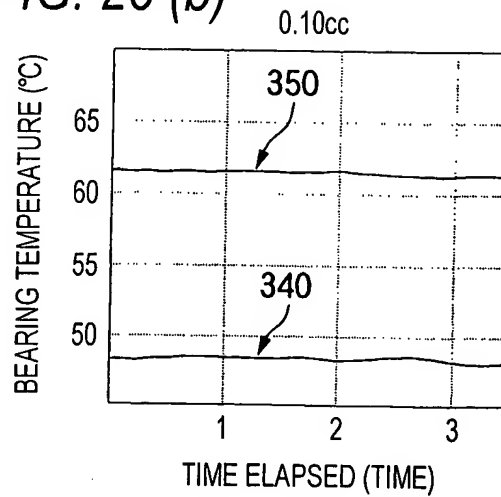


FIG. 26 (c)

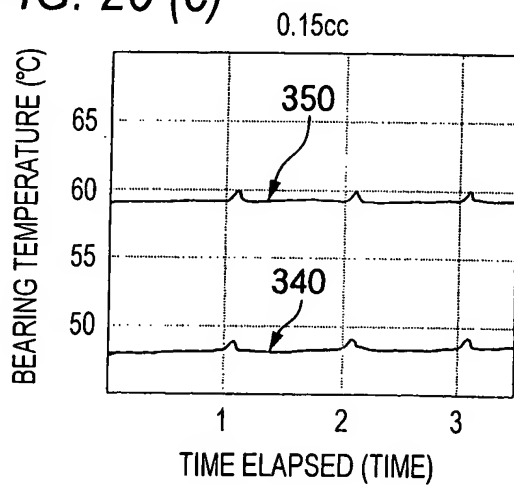


FIG. 26 (d)

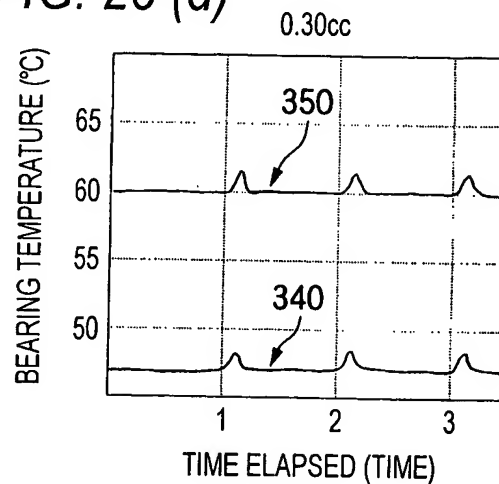
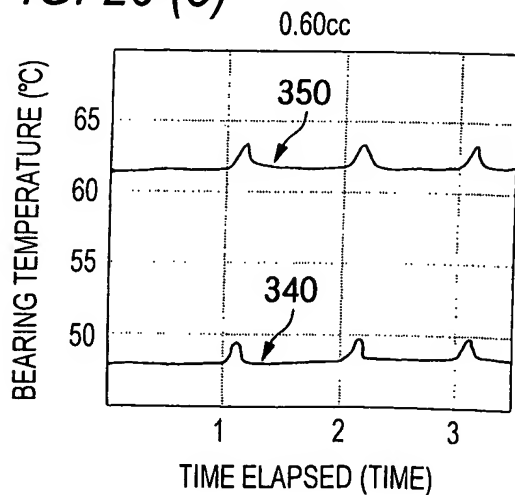
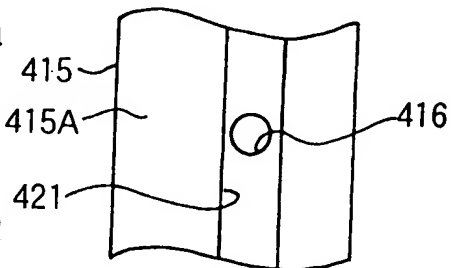


FIG. 26 (e)





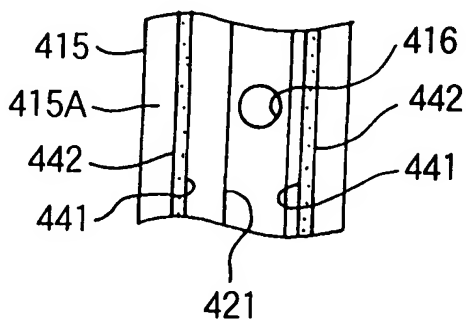


FIG. 31

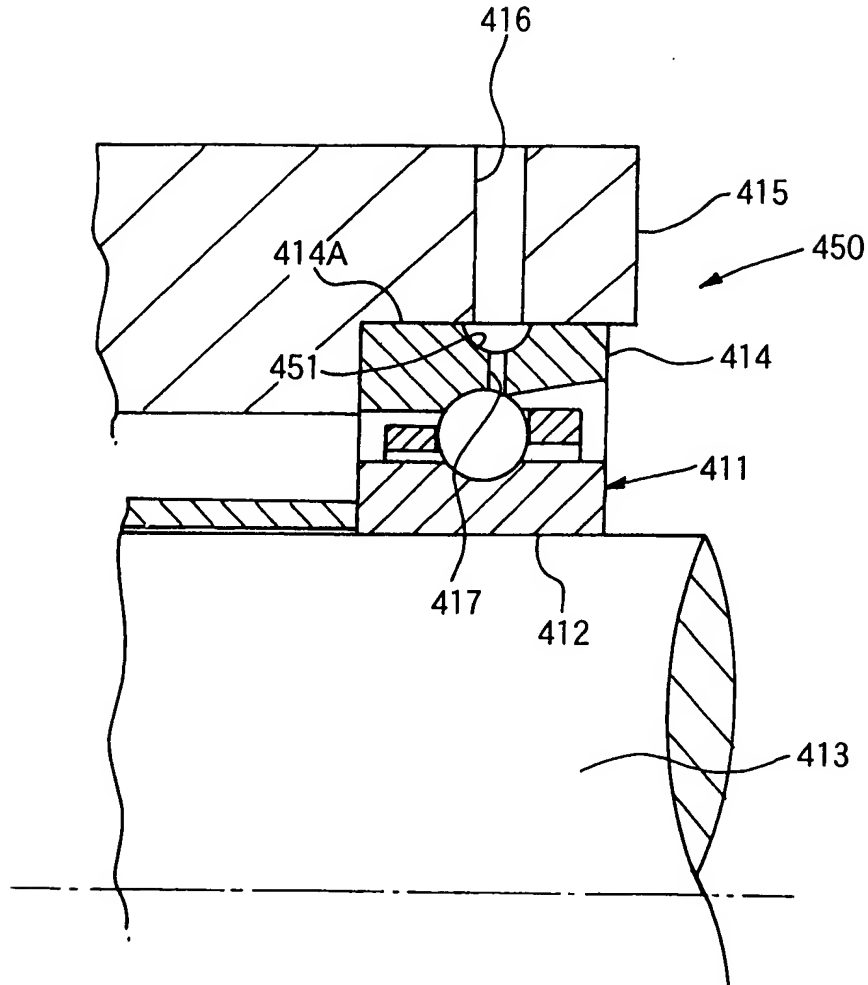


FIG. 32

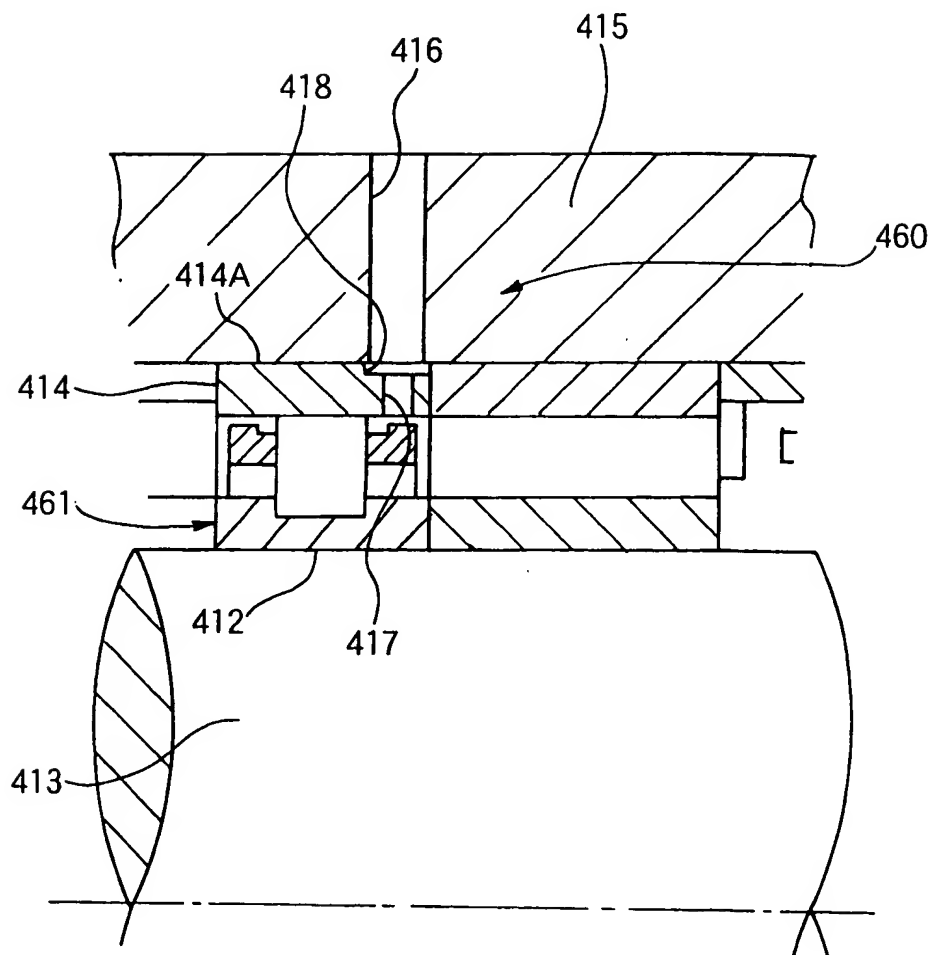


FIG. 33

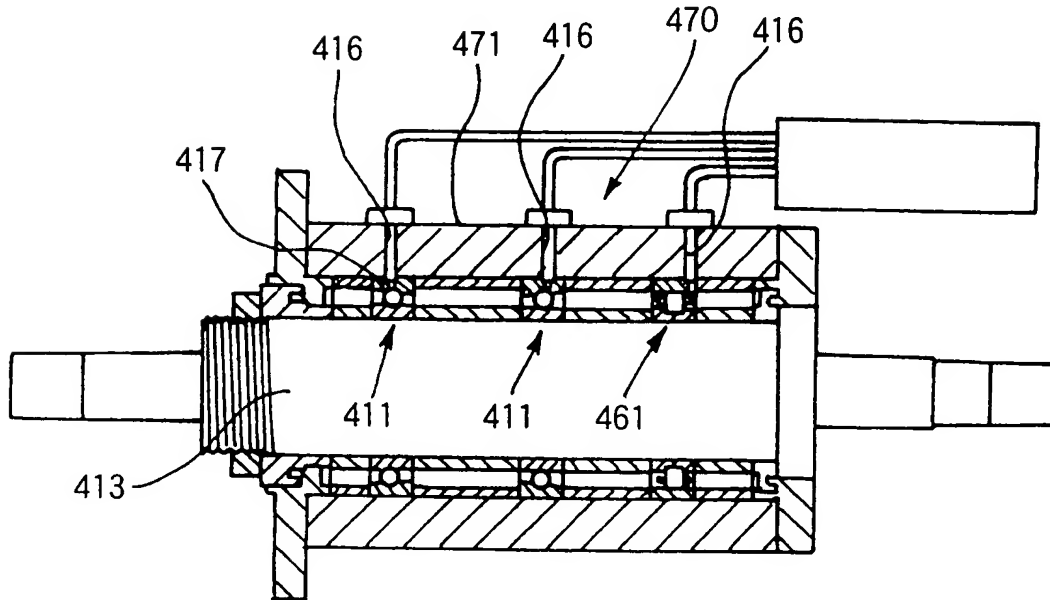


FIG. 34

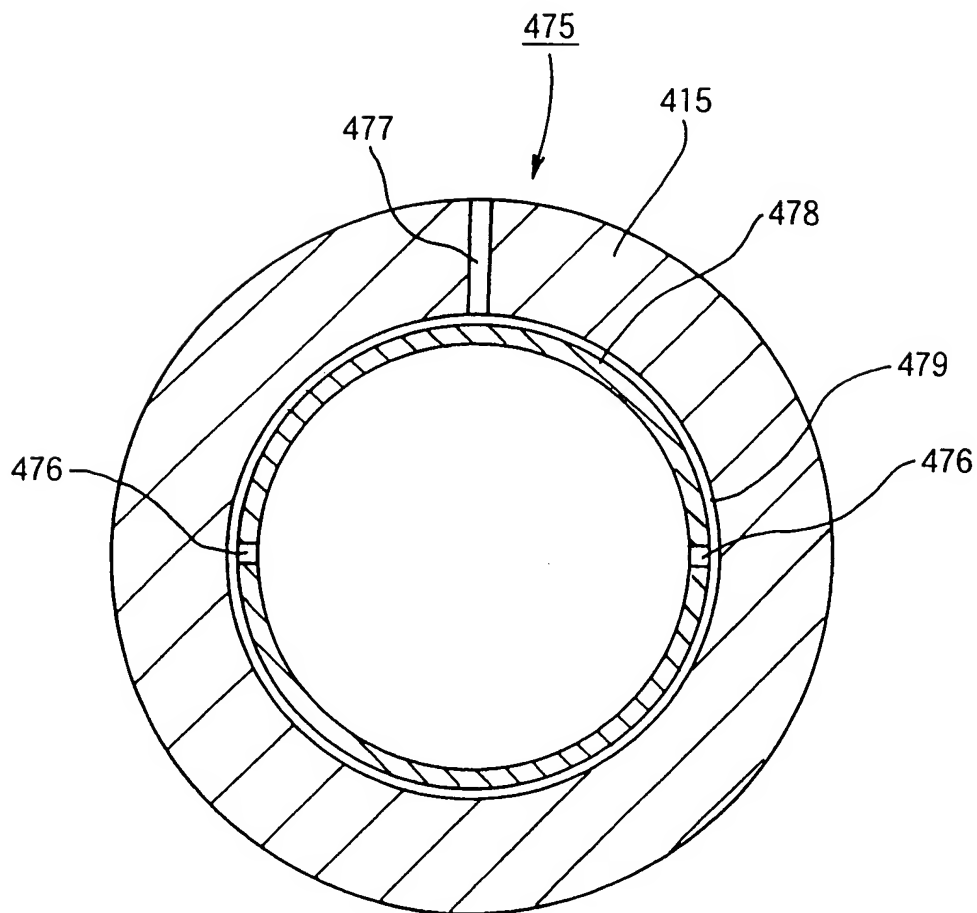


FIG. 35 (a)

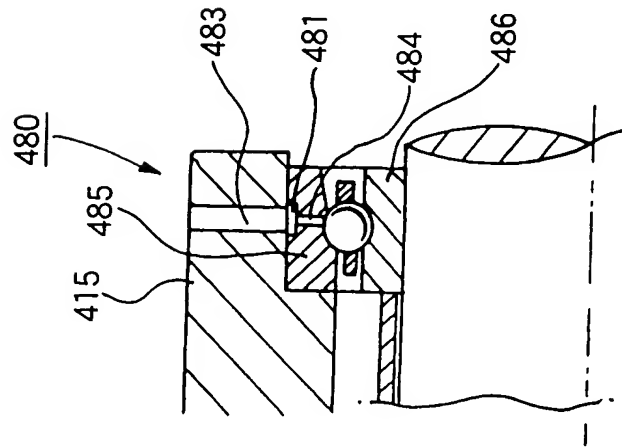


FIG. 35 (b)

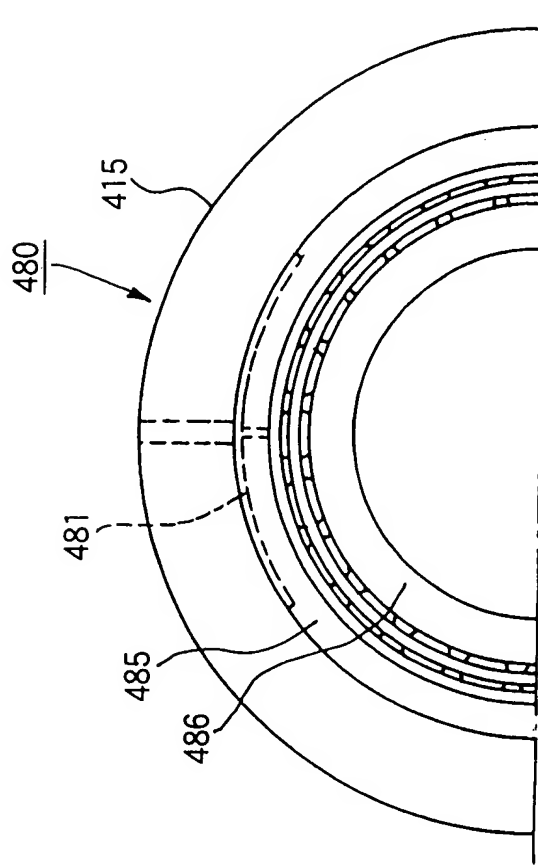


FIG. 36 (a)

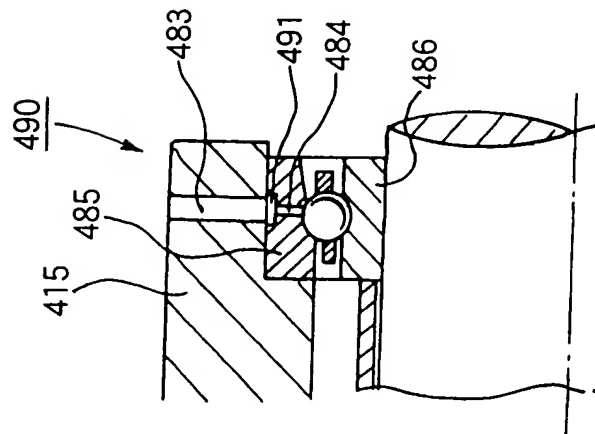


FIG. 36 (b)

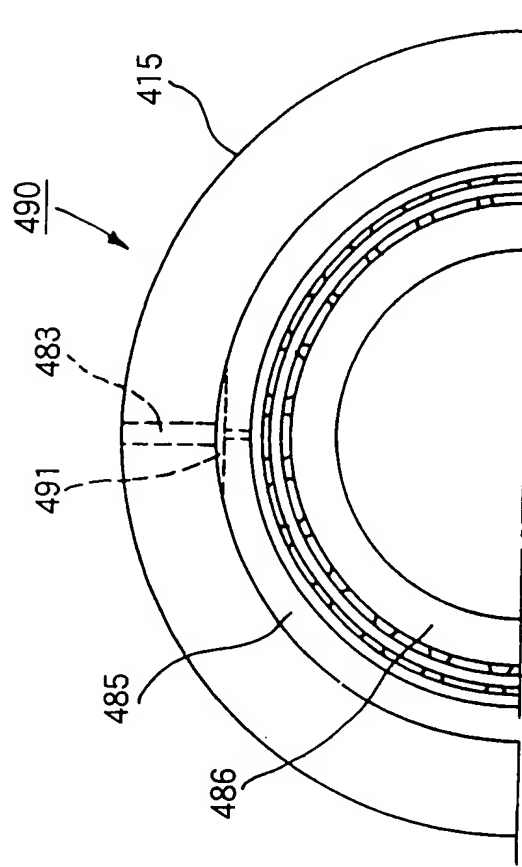


FIG. 37 (a)

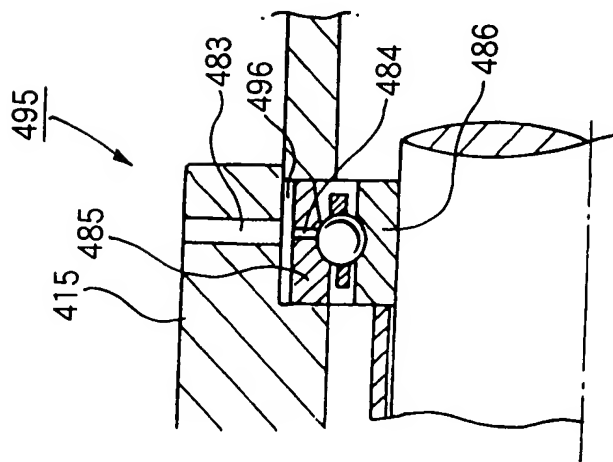


FIG. 37 (b)

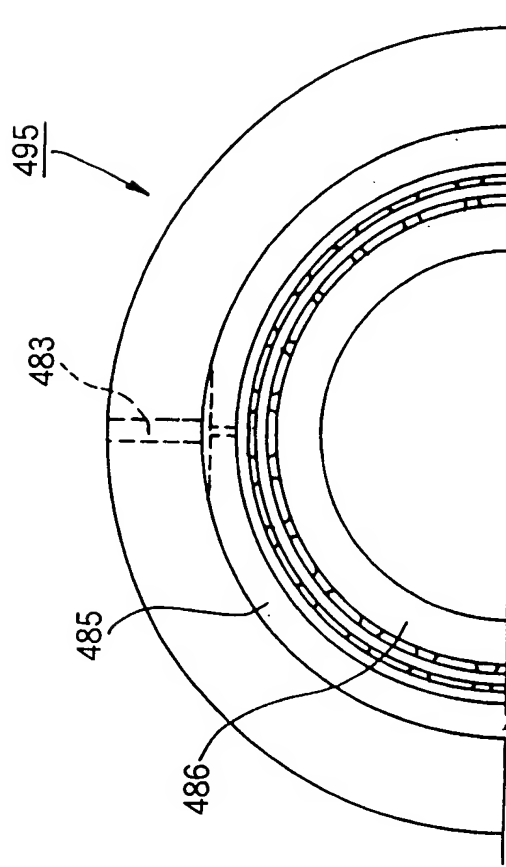


FIG. 38 (a)

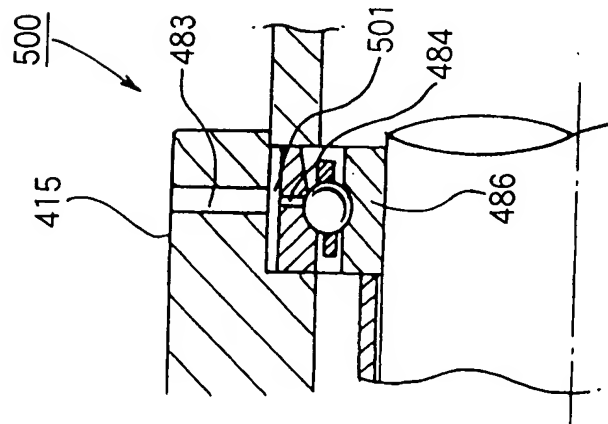


FIG. 38 (b)

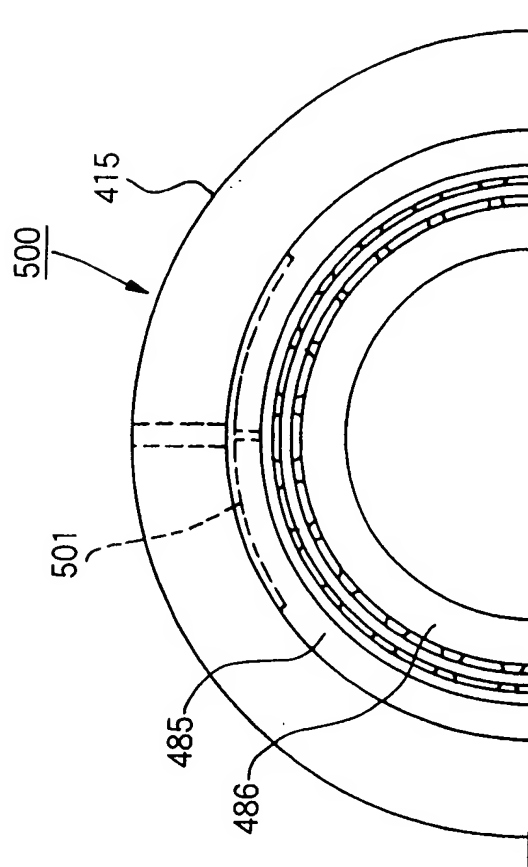


FIG. 39 (a)

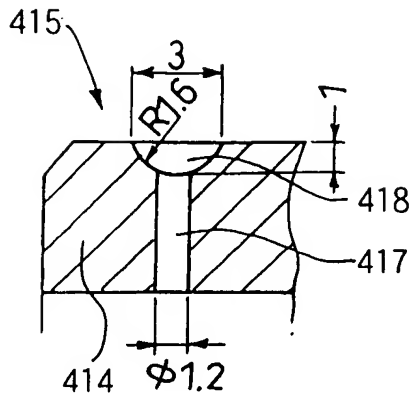


FIG. 39 (b)

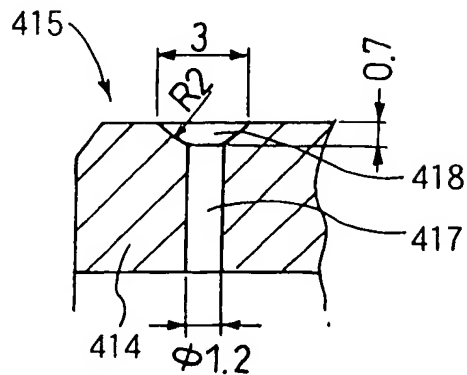


FIG. 39 (c)

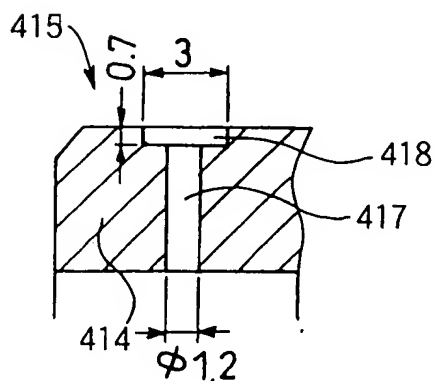


FIG. 39 (d)

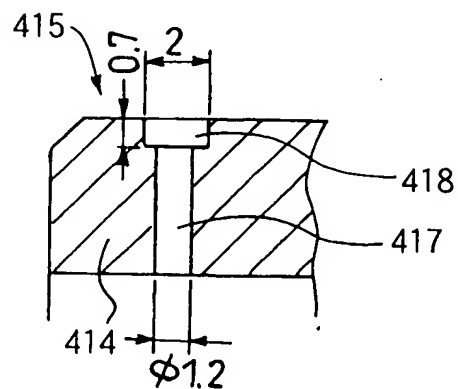


FIG. 39 (e)

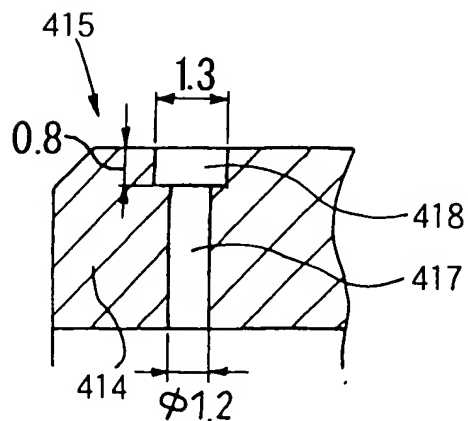
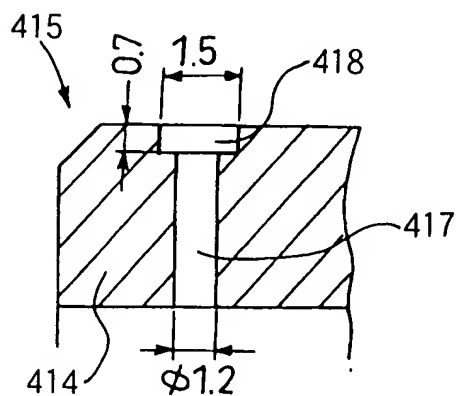


FIG. 39 (f)



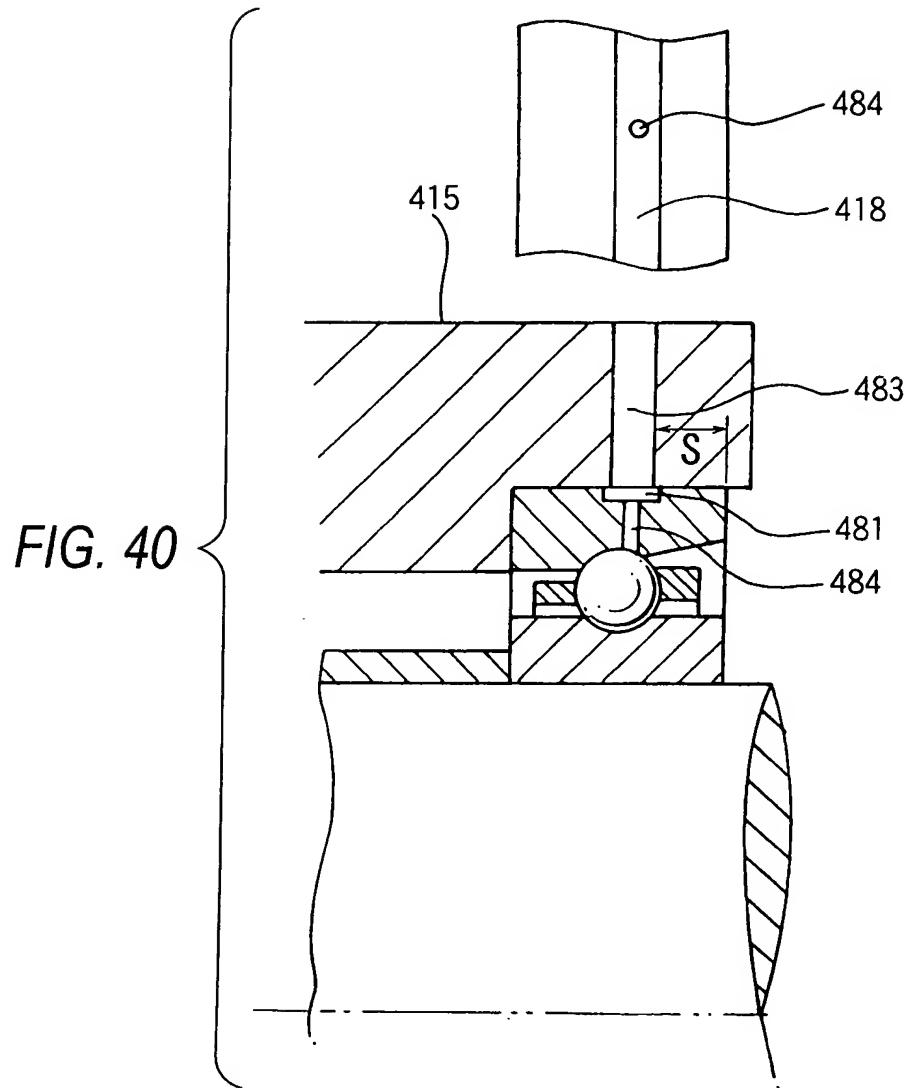


FIG. 41

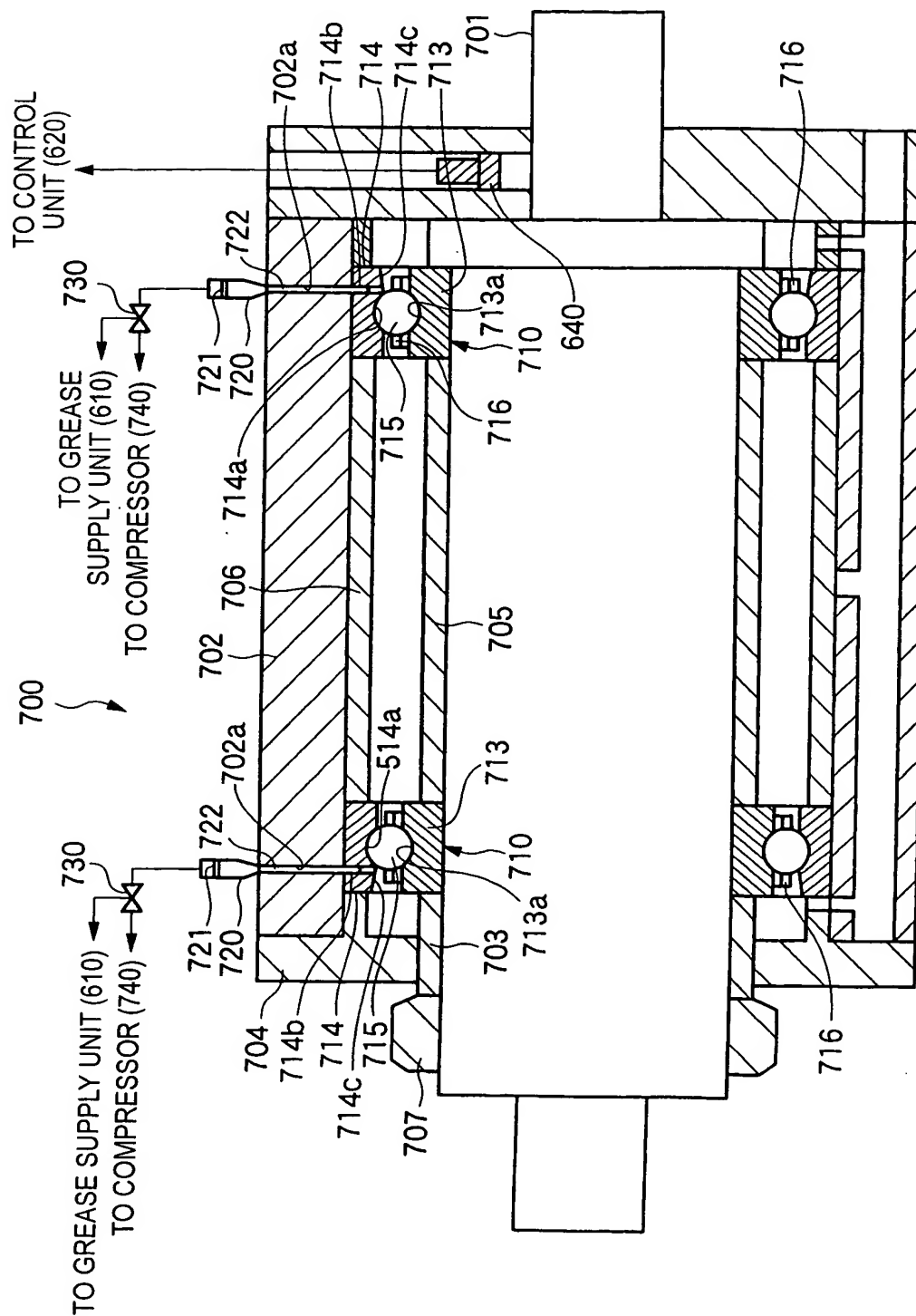


FIG. 42

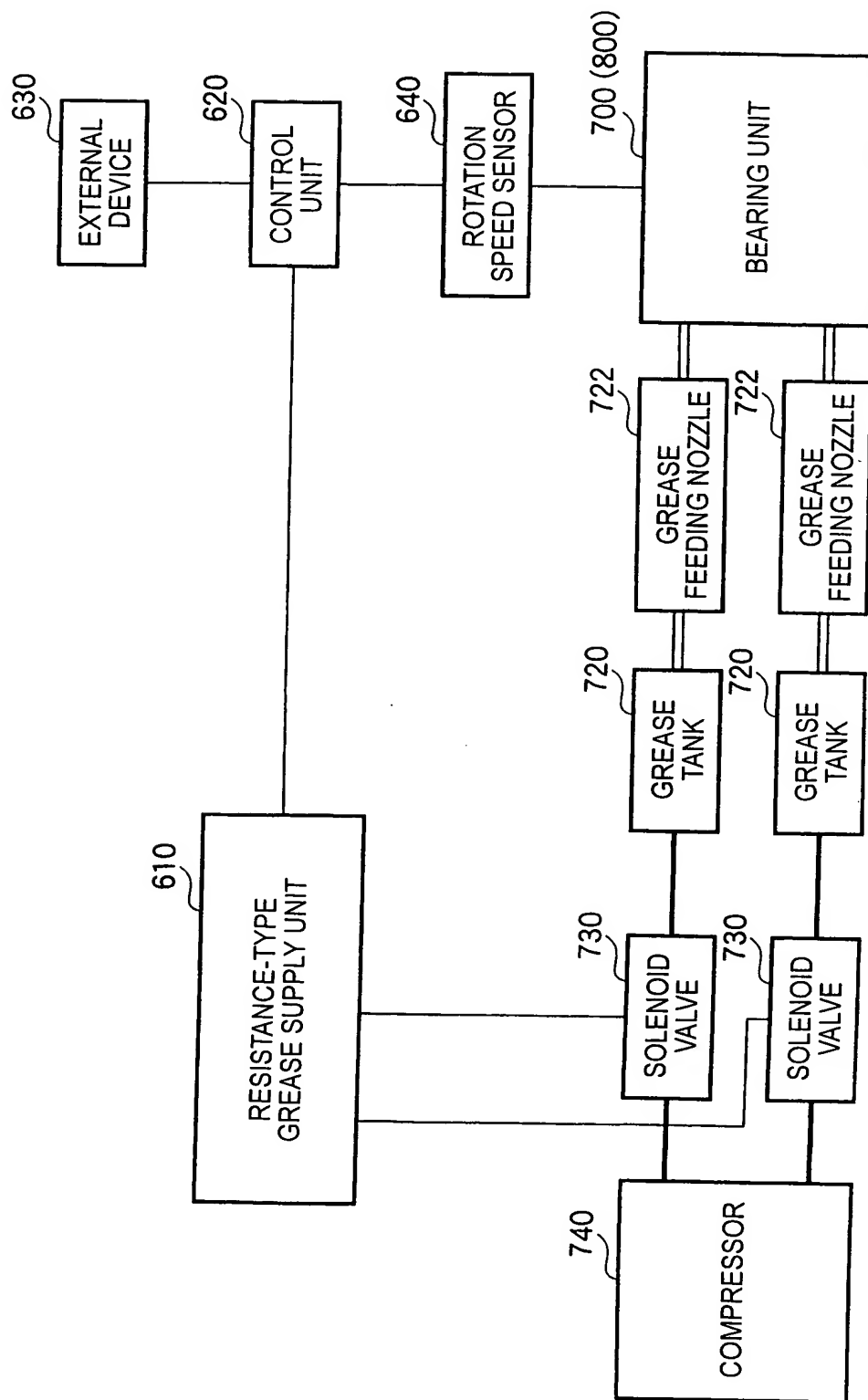


FIG. 43

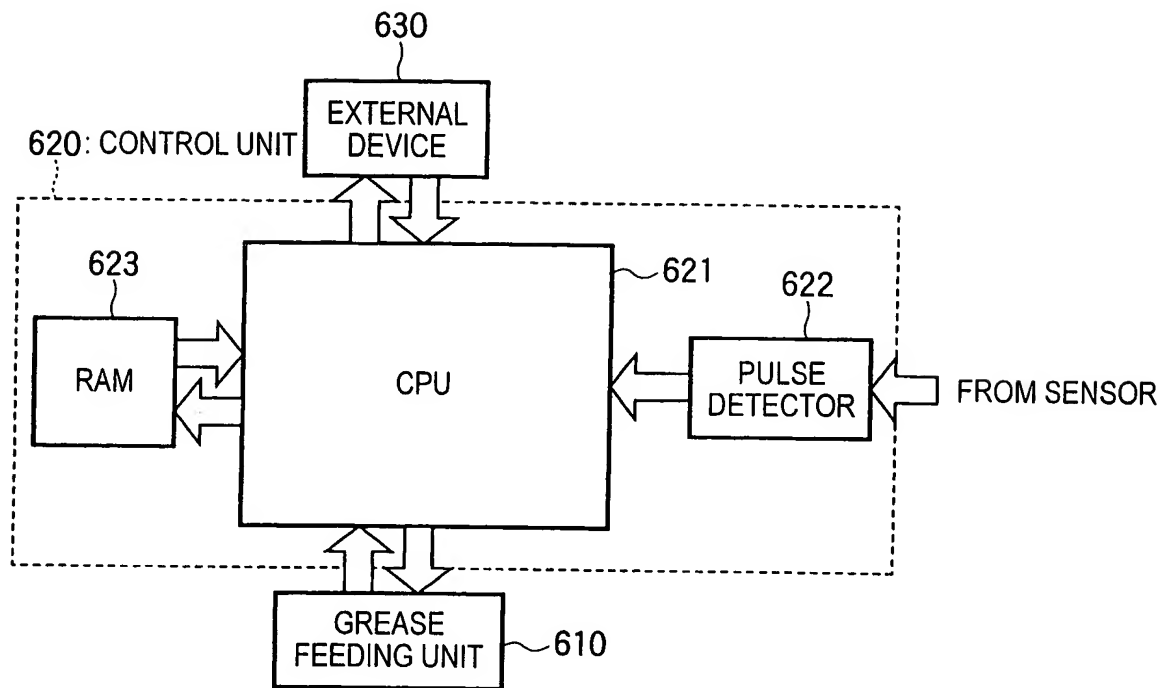


FIG. 44

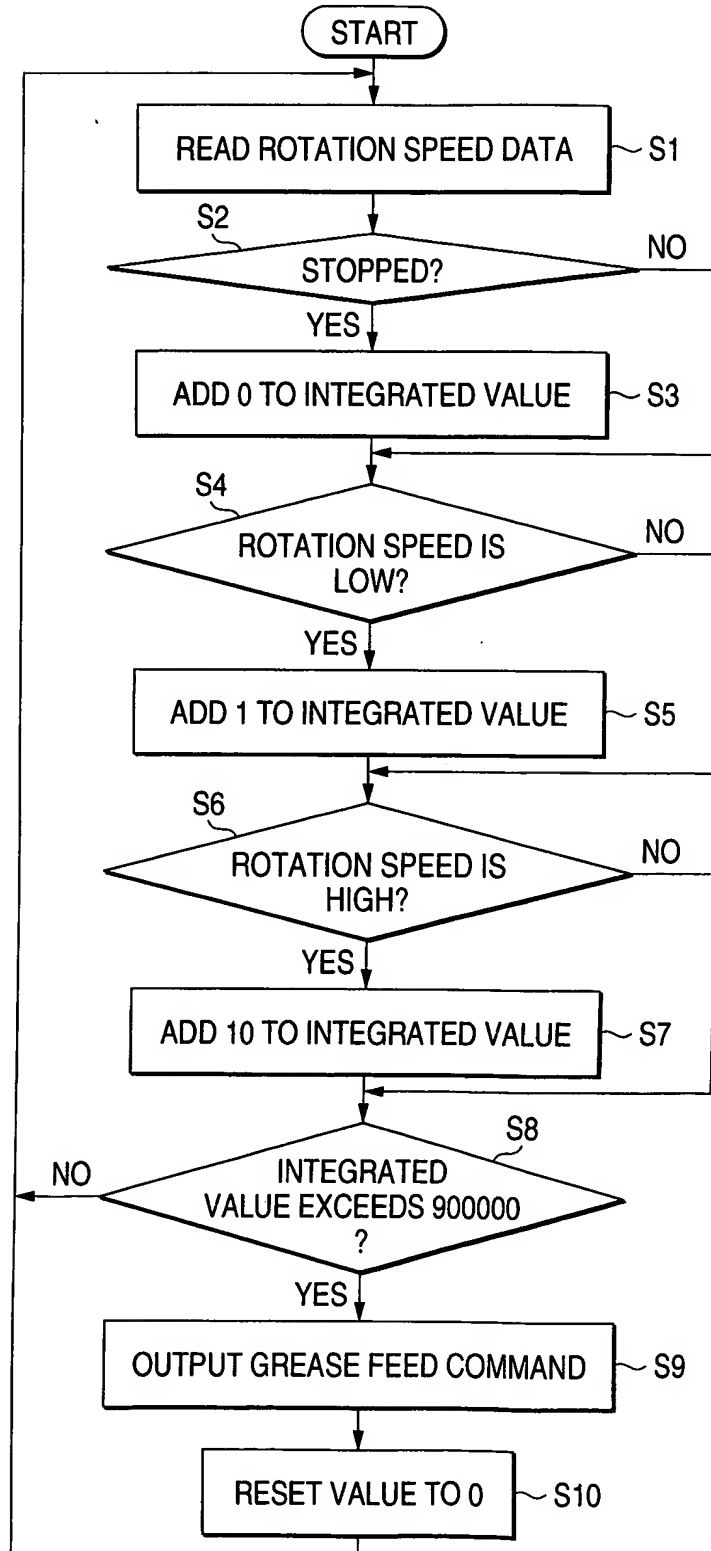


FIG. 45 (a)

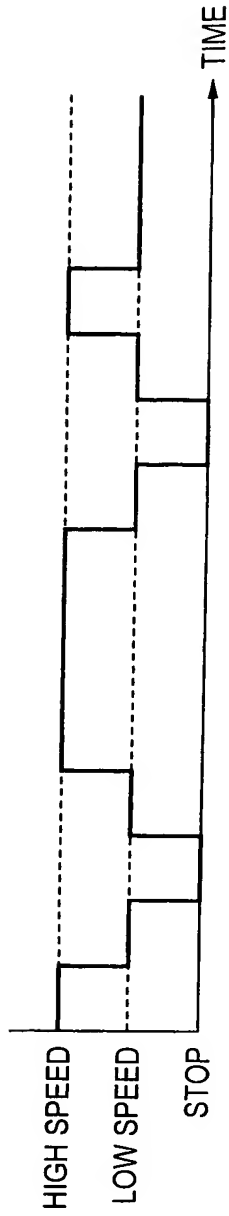


FIG. 45 (b)

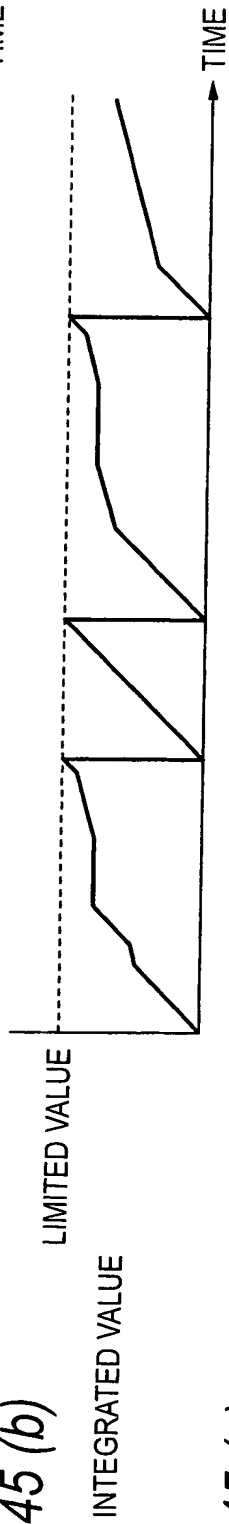


FIG. 45 (c)

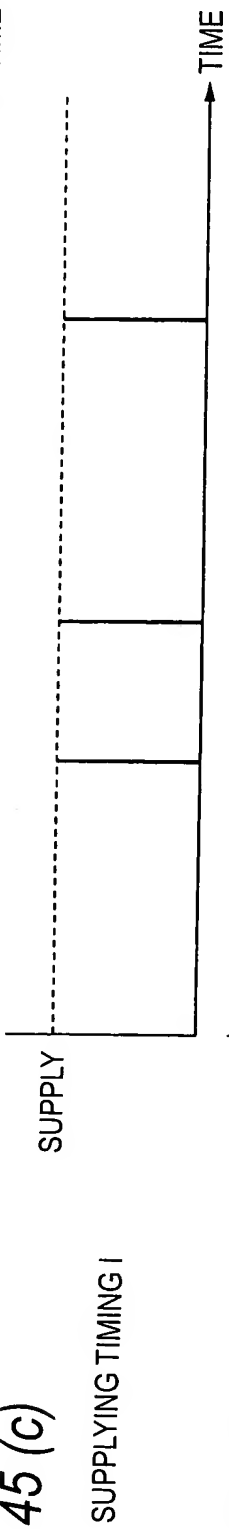


FIG. 45 (d)

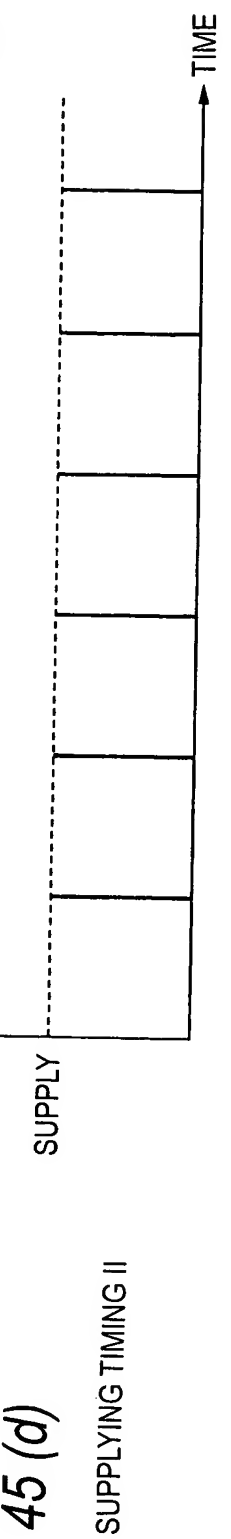


FIG. 46

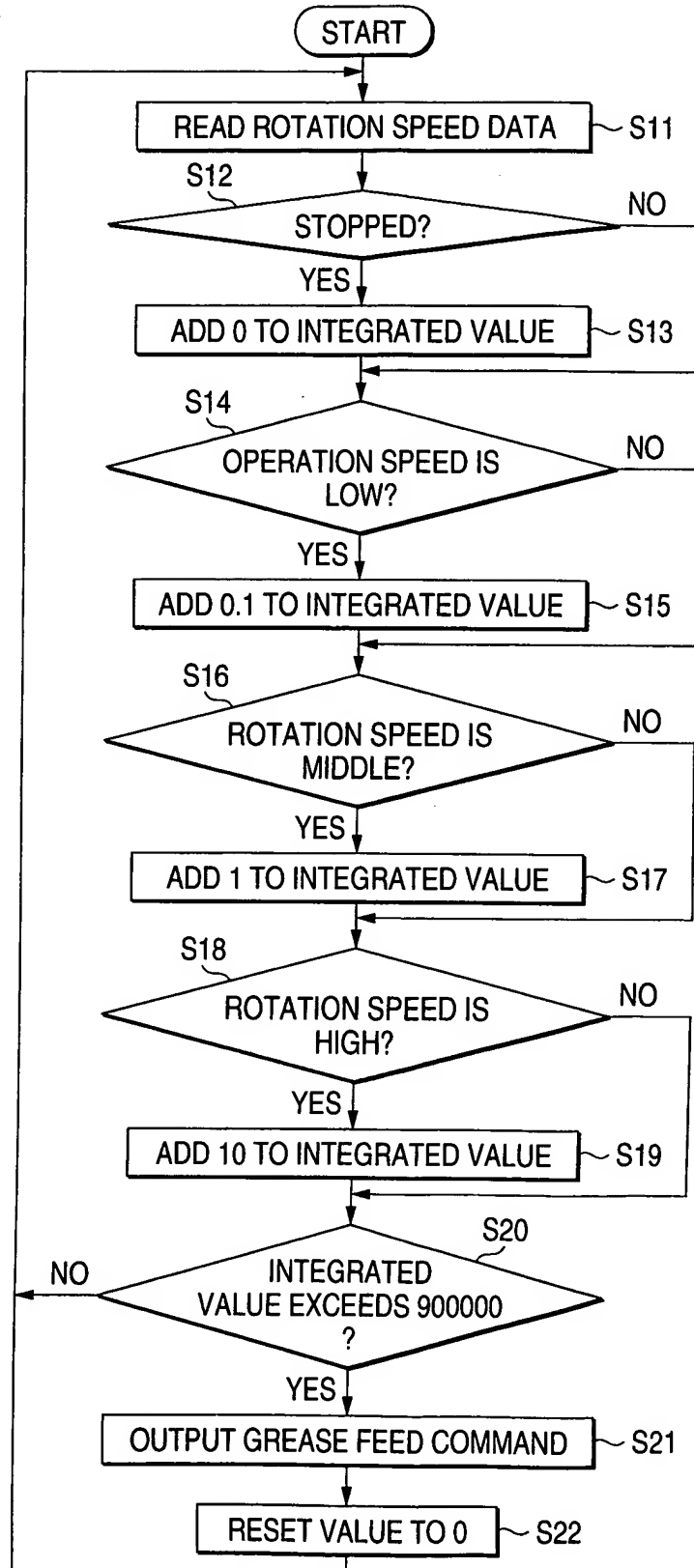
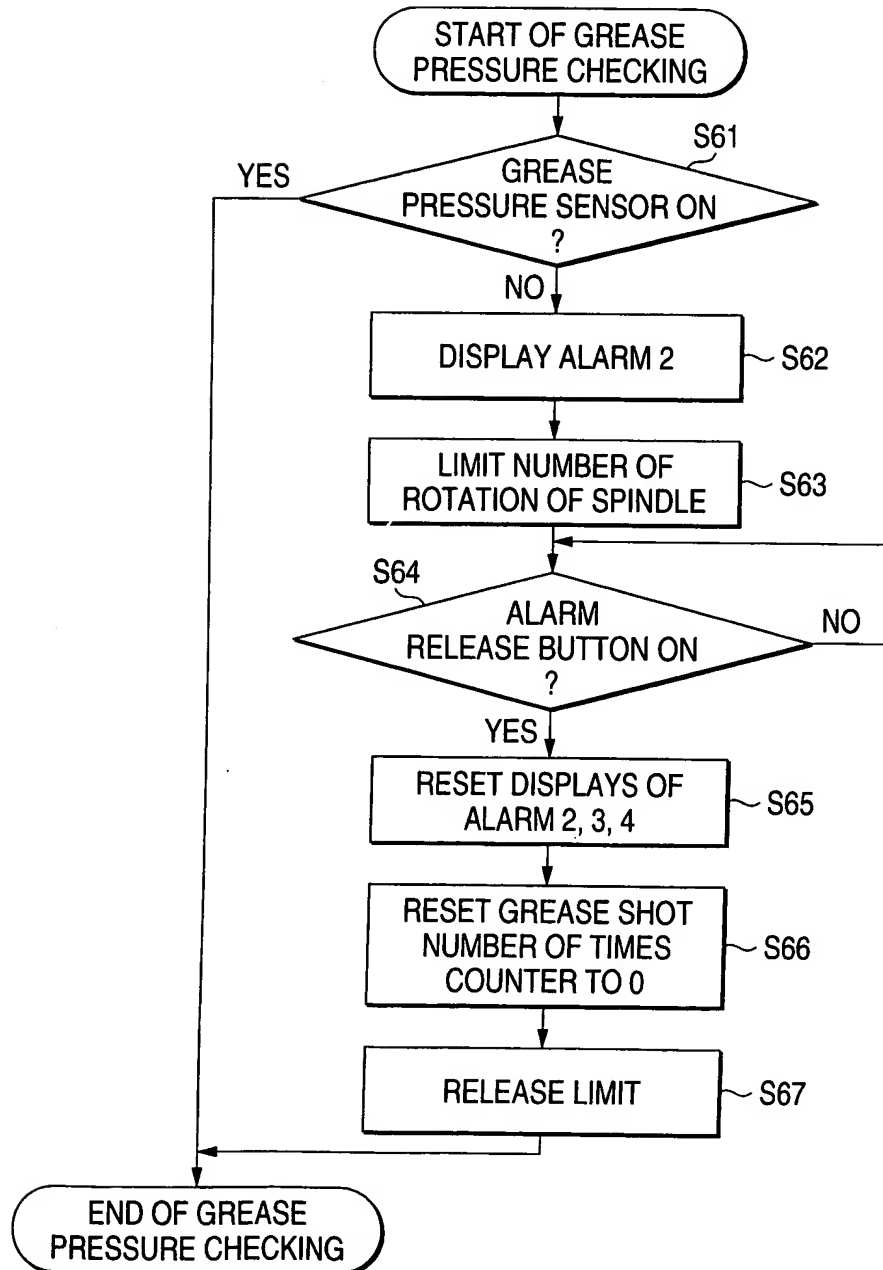


FIG. 54



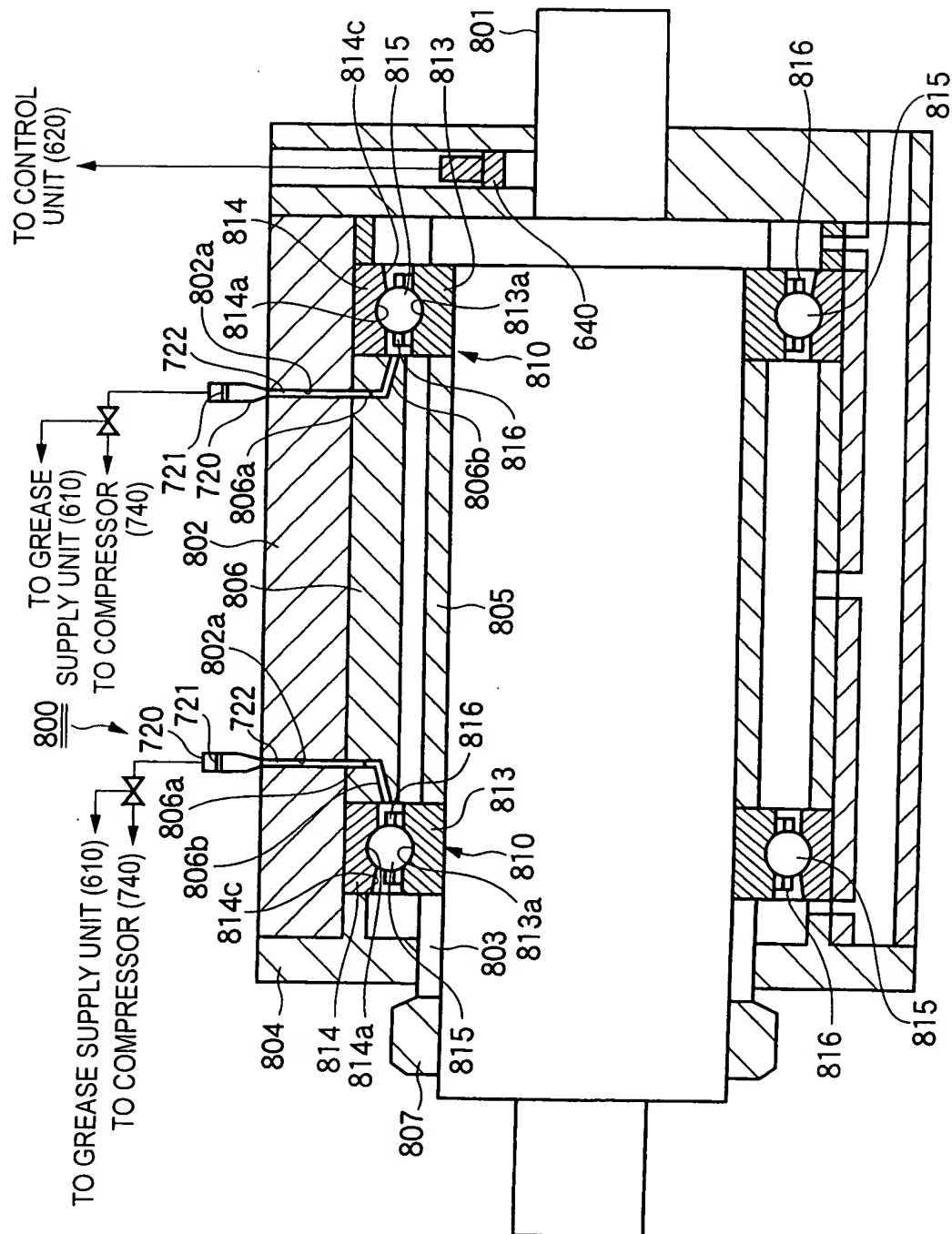
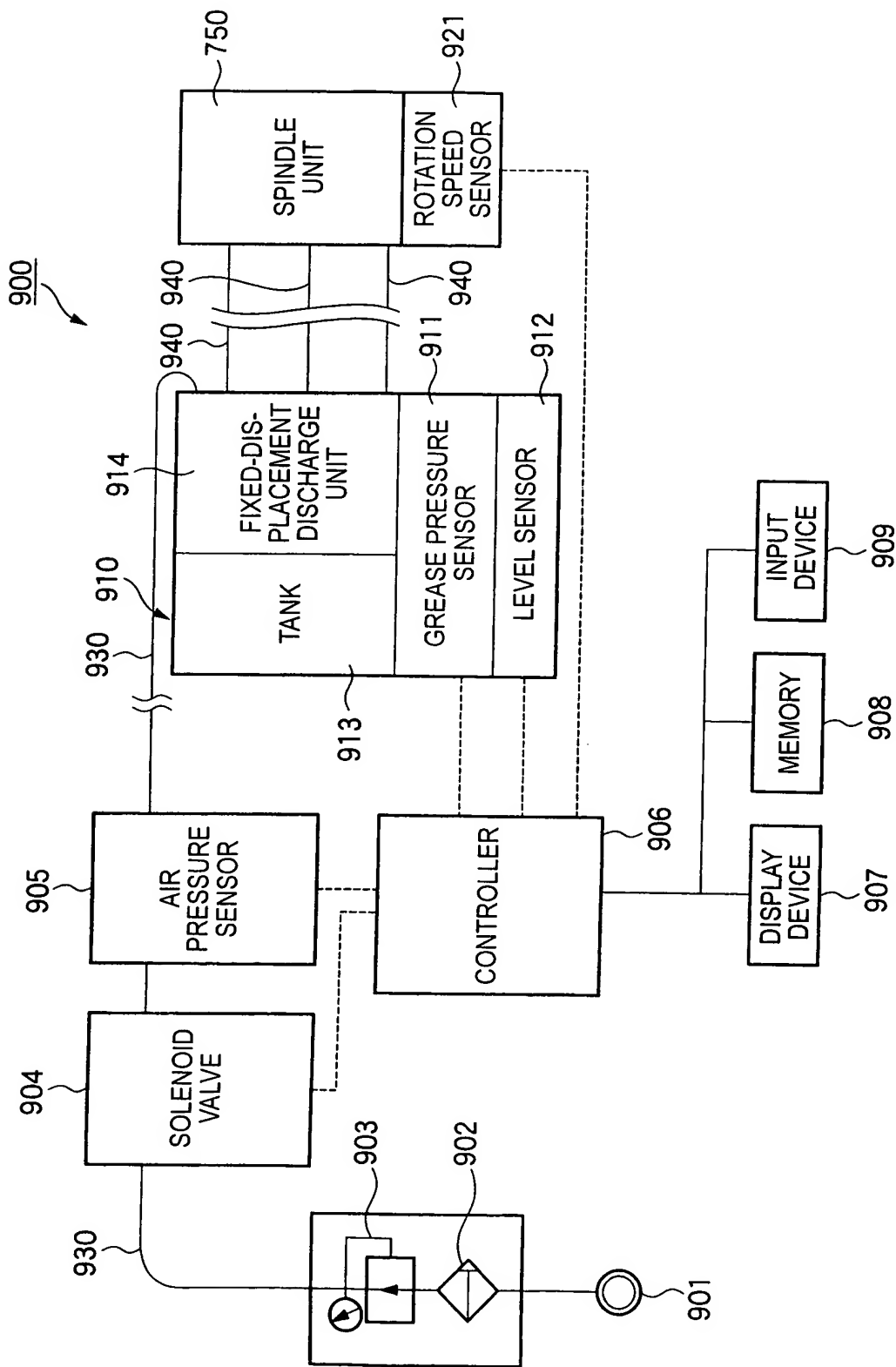


FIG. 49



This diagram shows a cross-section of a complex mechanical assembly, possibly a bearing or a specialized seal. The assembly consists of multiple concentric layers and internal components. Key features include:

- Grease Supply Unit (910):** Located at the top, it is connected to a passage (792) that leads into the assembly.
- Outer Housing (750):** The main outer structure, featuring various internal passages and grooves.
- Internal Components:**
 - 761, 762, 763, 764, 765, 766:** Various internal rings, seals, or structural elements.
 - 777, 778, 779:** Additional internal layers or components.
 - 780, 781, 782, 783, 784, 785, 786, 787, 788, 789:** A series of internal components, possibly seals or guides, arranged radially.
 - 793a, 793b, 793c:** Specific internal features or passages.
 - 794, 795, 796, 797, 798, 799:** Further internal components and passages.
- Central Shaft:** A central horizontal shaft passing through the assembly, supported by bearings or guides.

The diagram uses hatching to indicate different materials or cross-sections of the components.

FIG. 51

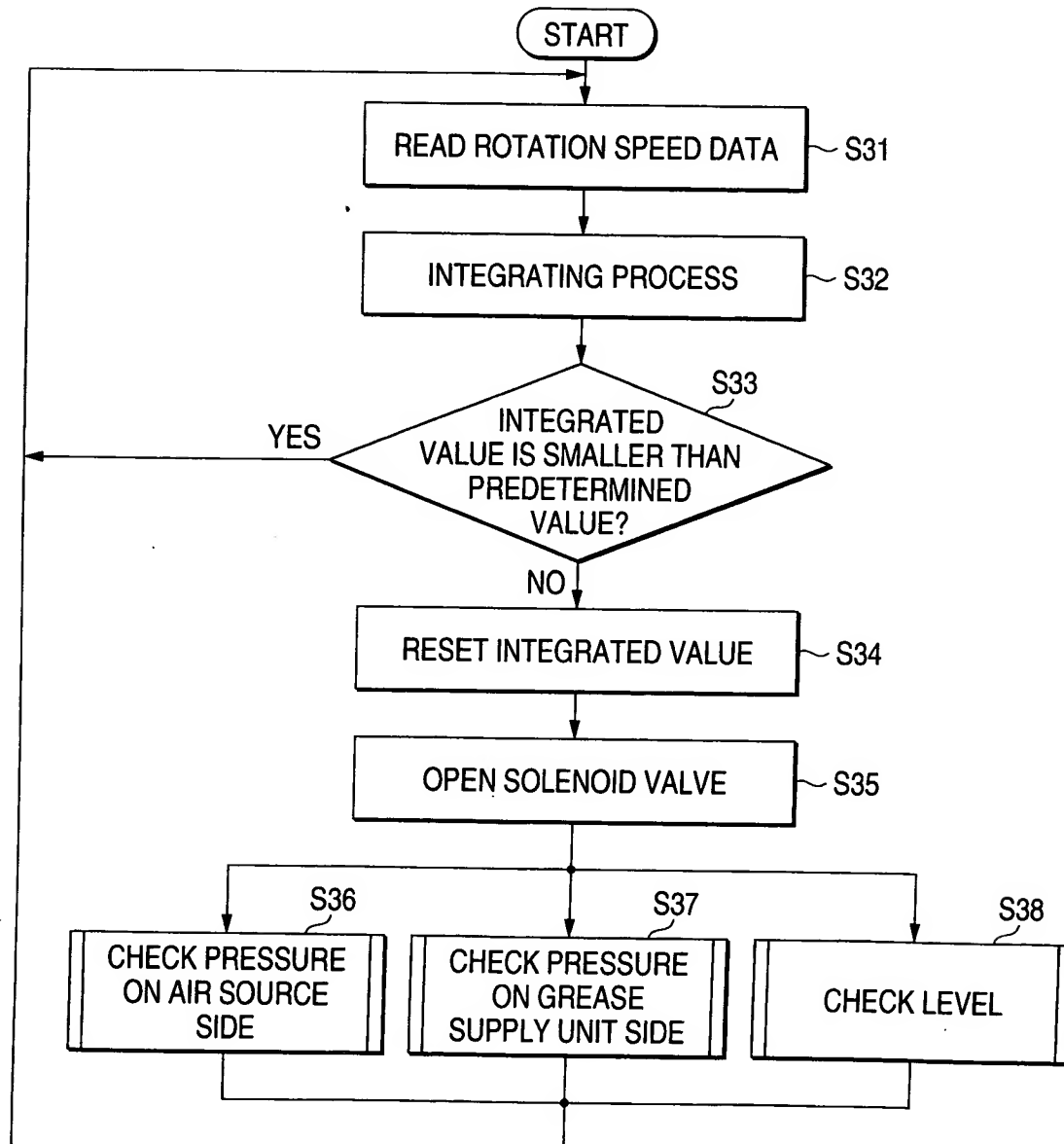


FIG. 52

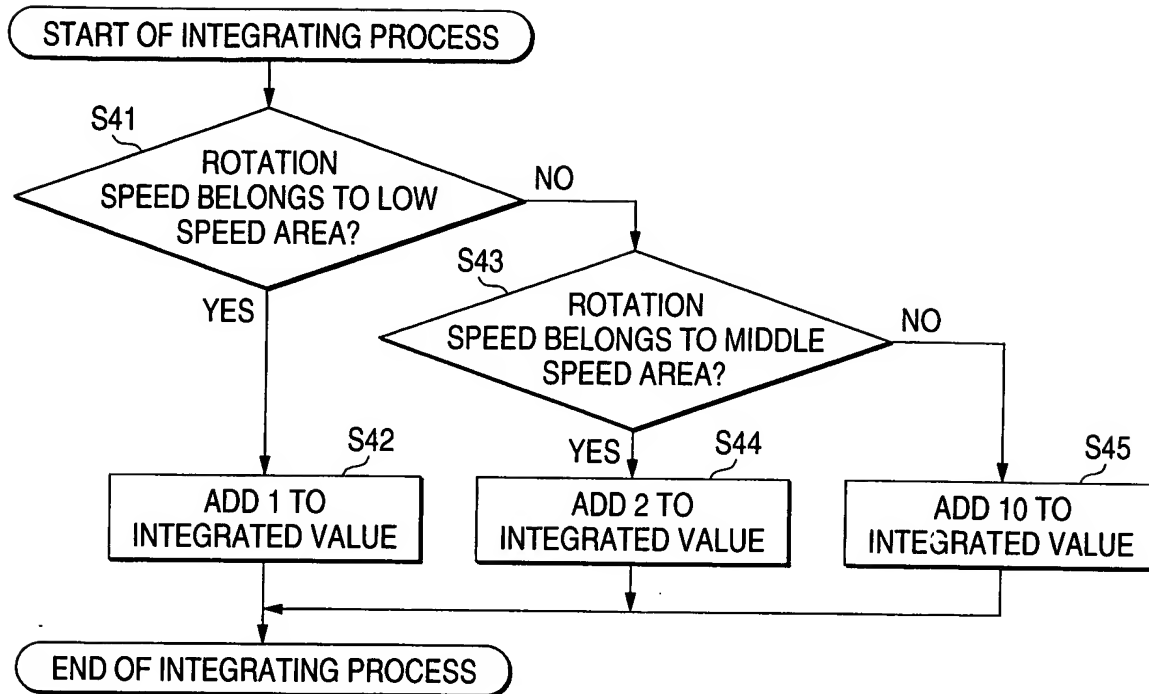


FIG. 53

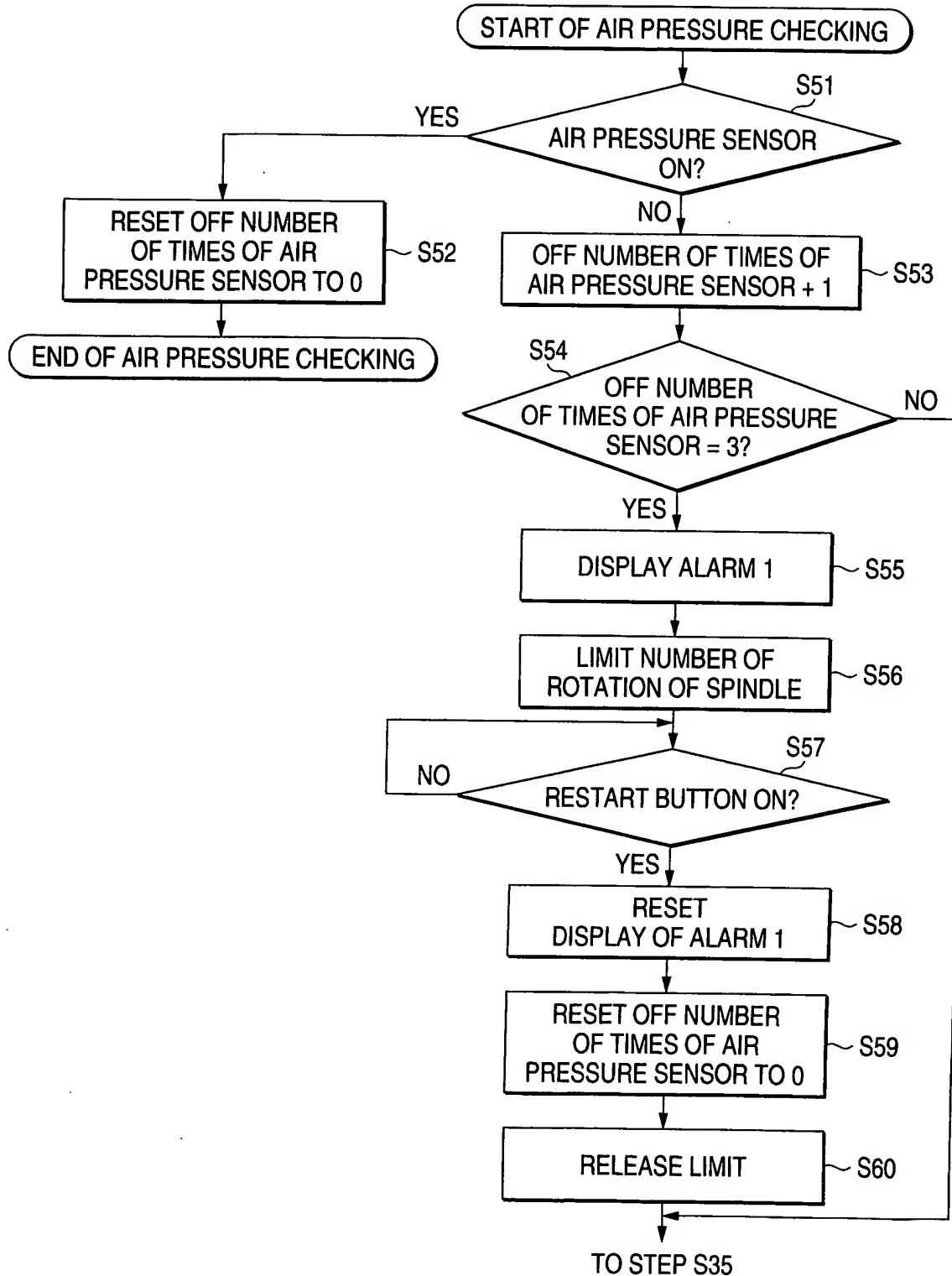


FIG. 54

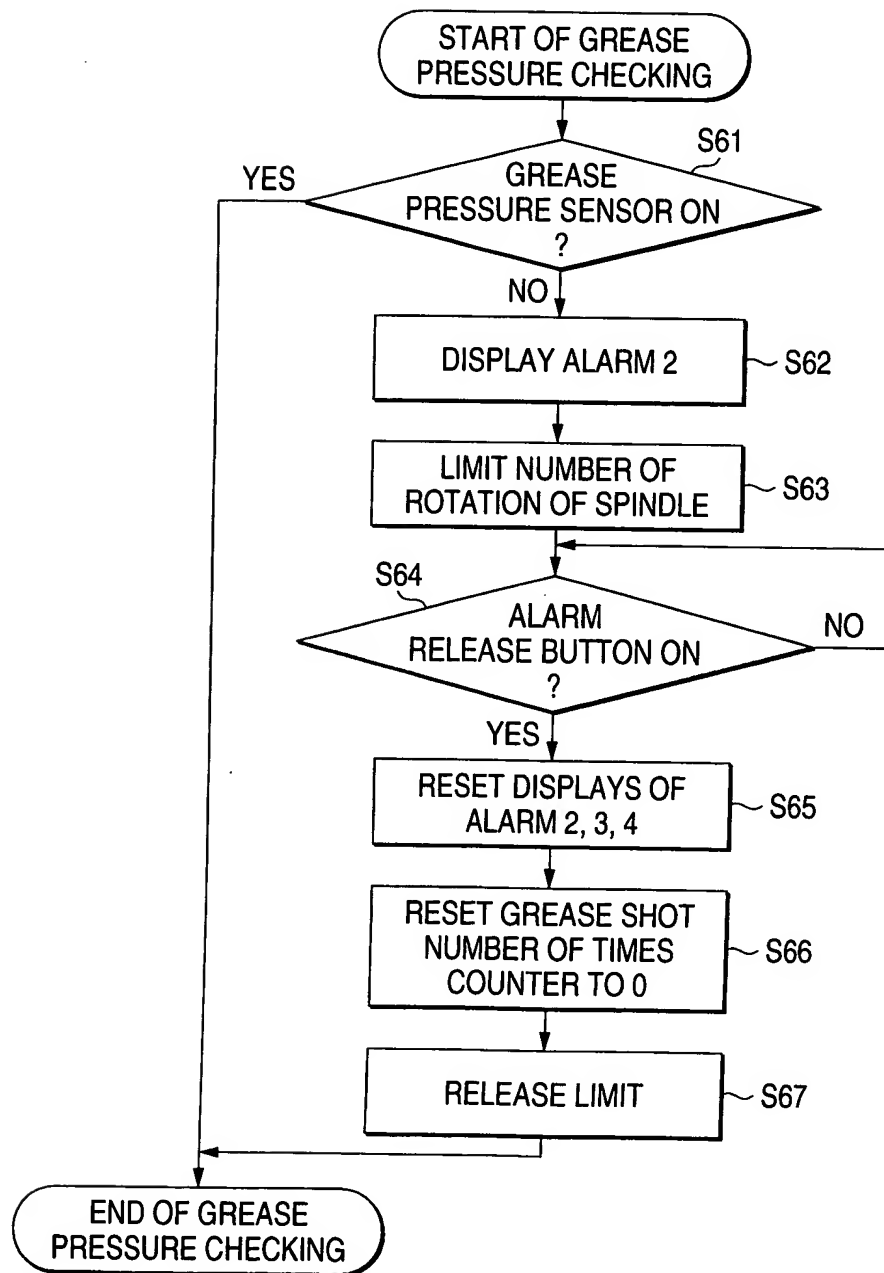


FIG. 55

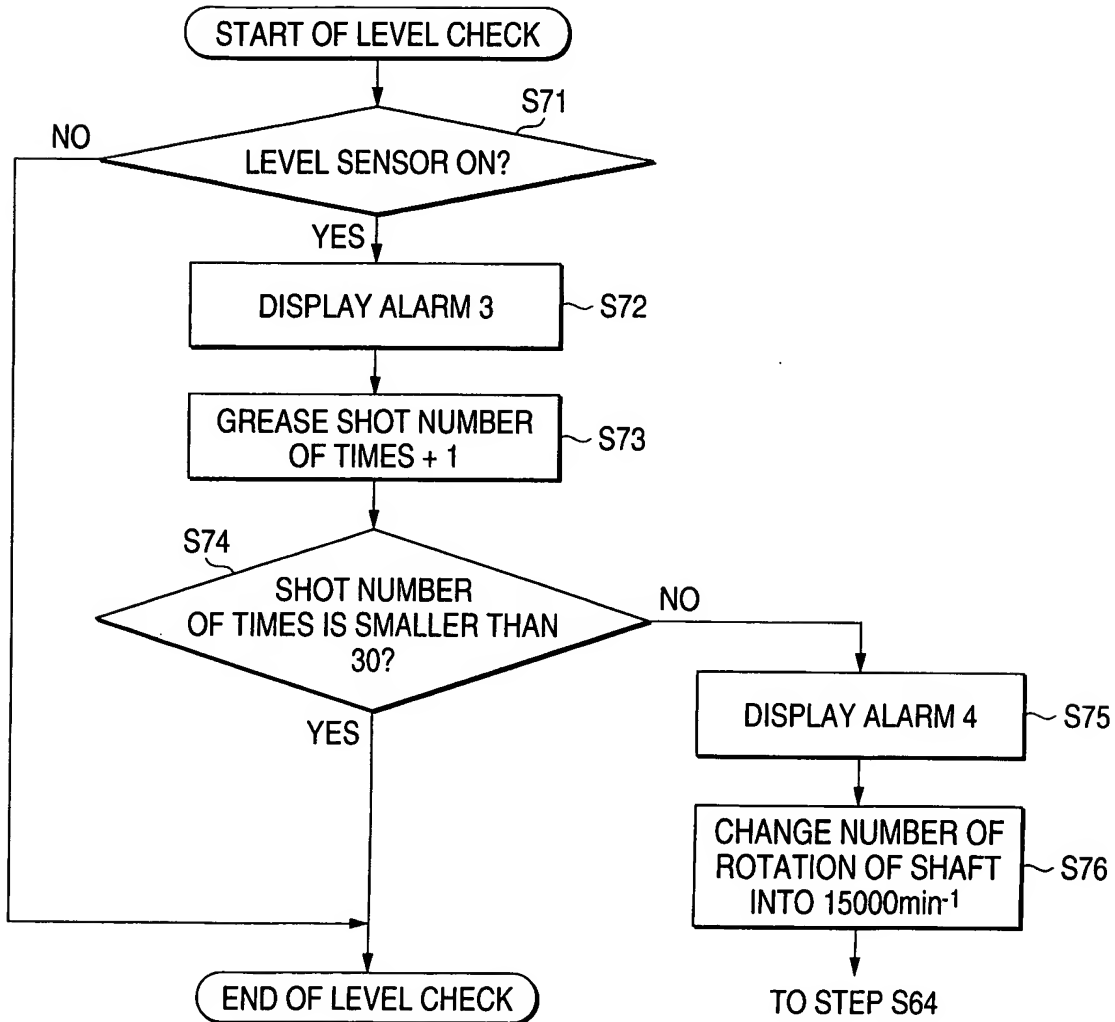


FIG. 56

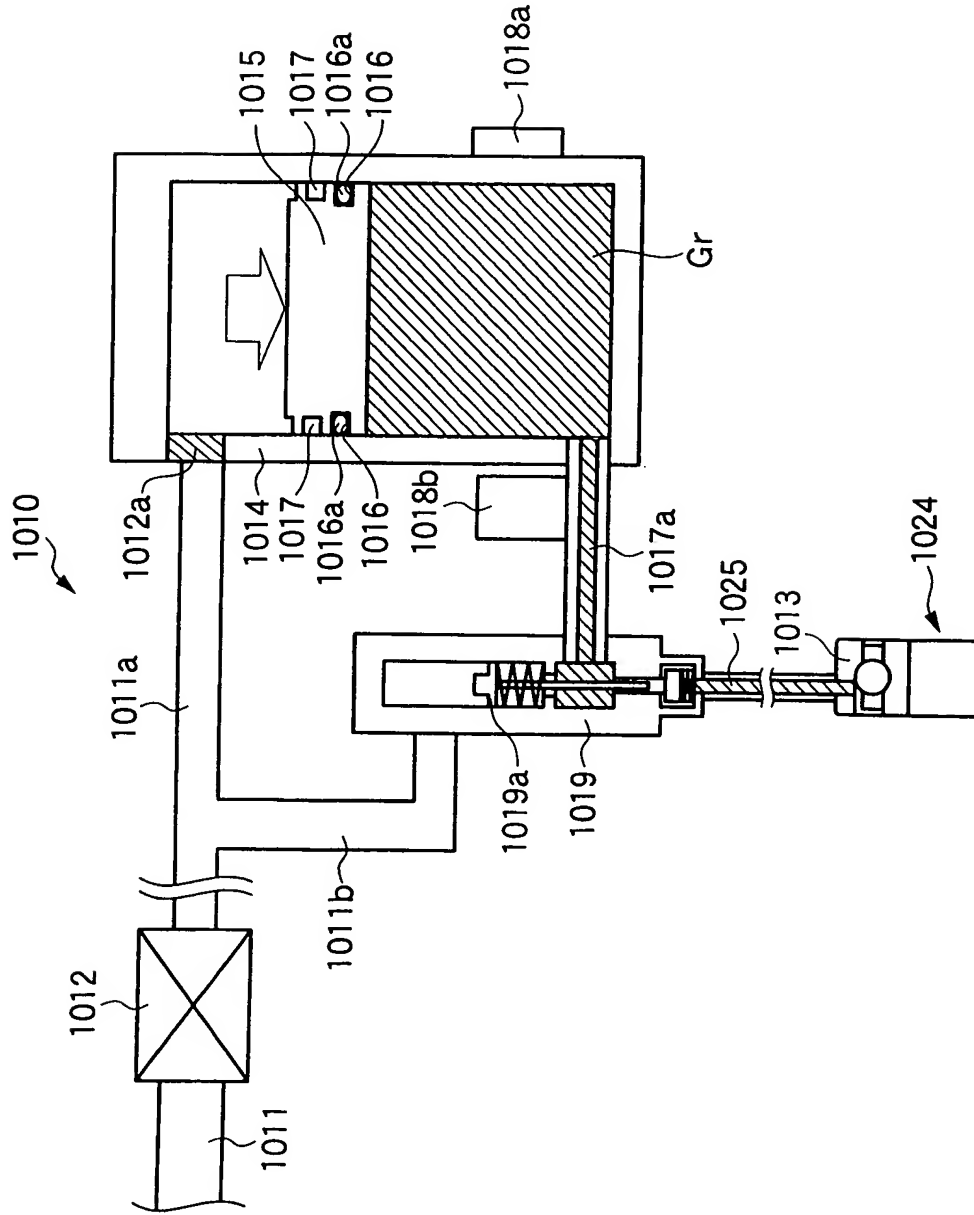


FIG. 57

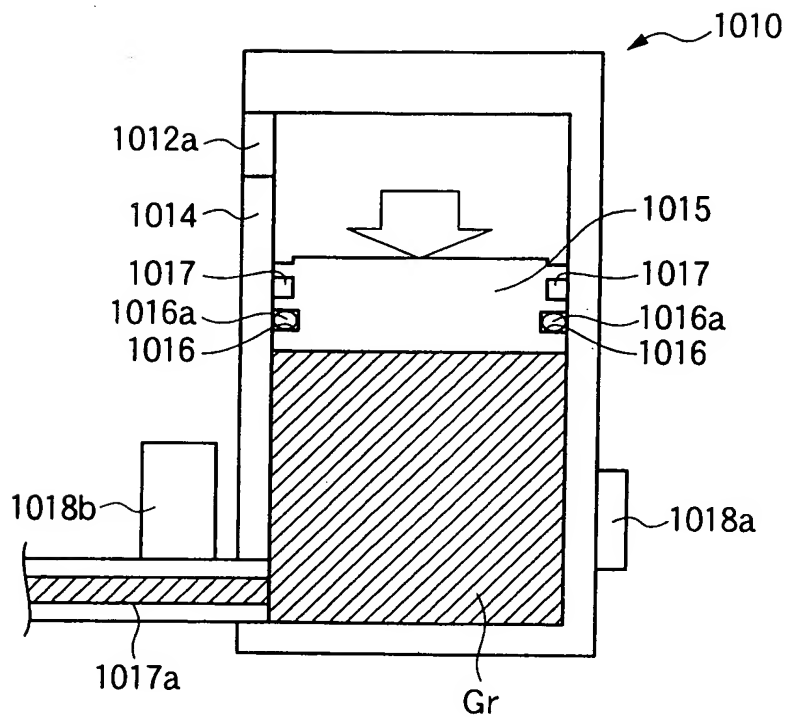


FIG. 58

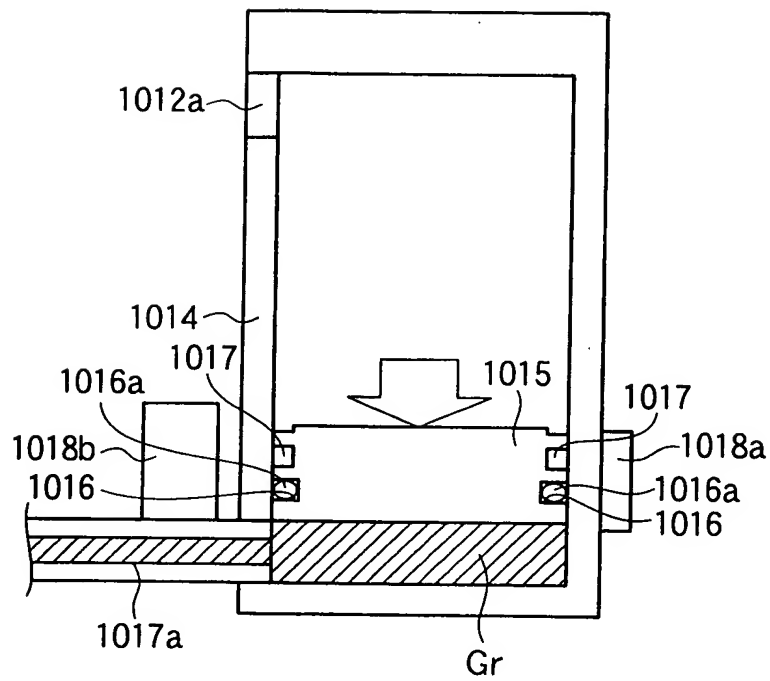


FIG. 59

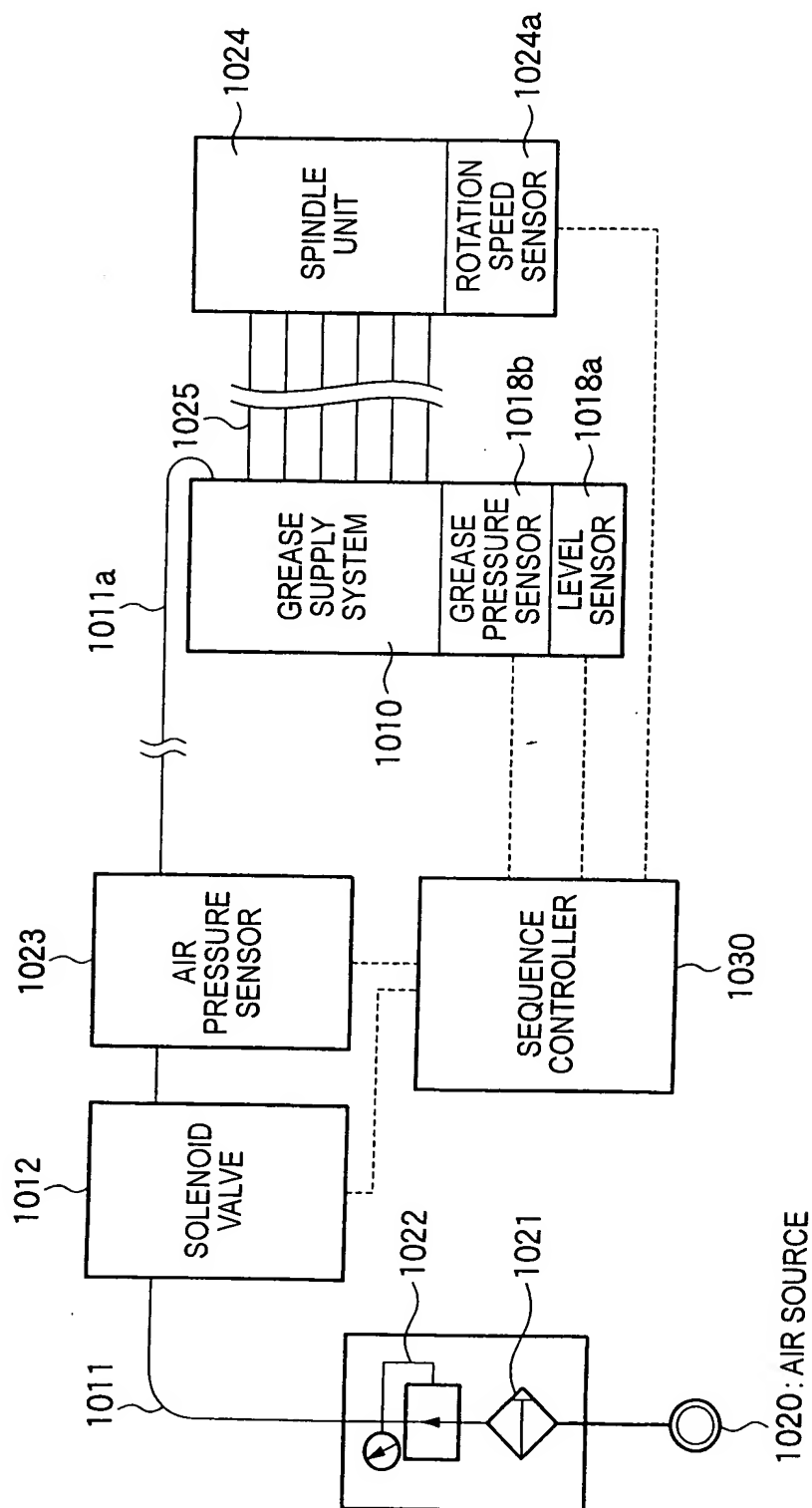


FIG. 60

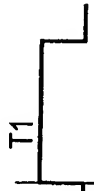
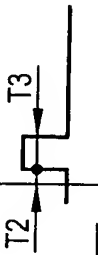
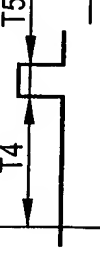
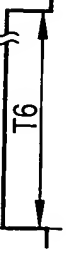
NAME	OPERATION TIMING AND MONITORING TIME	OPERATION	CONTENTS
SOLENOID VALVE	ON 	—	—
AIR PRESSURE SENSOR	ON 	OFF	REDUCTION OF THE AIR PRESSURE
GREASE PRESSURE SENSOR	ON 	OFF	REDUCTION OF THE GREASE TANK PRESSURE
LEVEL SENSOR	ON 	ON	LACK OF A RESIDUAL AMOUNT IN THE GREASE TANK

FIG. 61

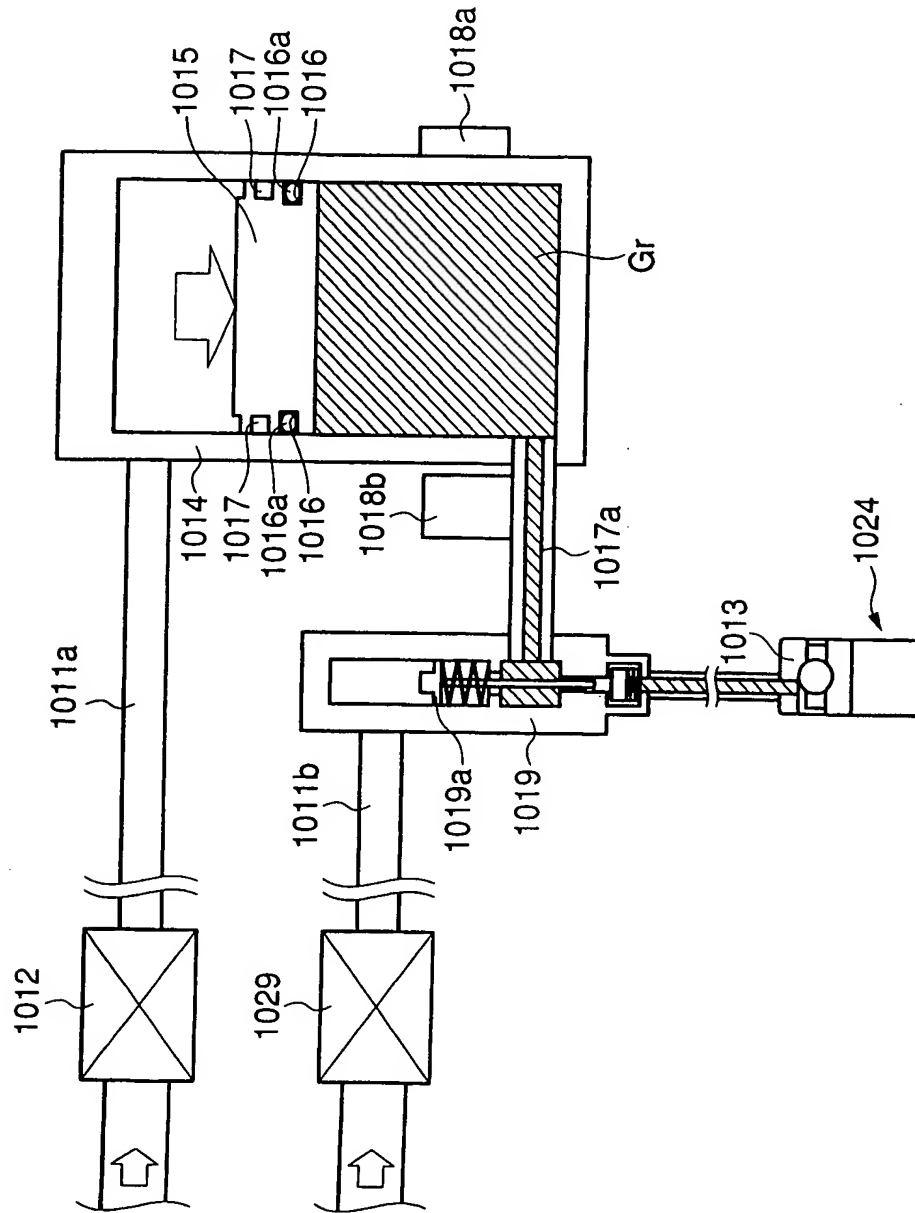


FIG. 62

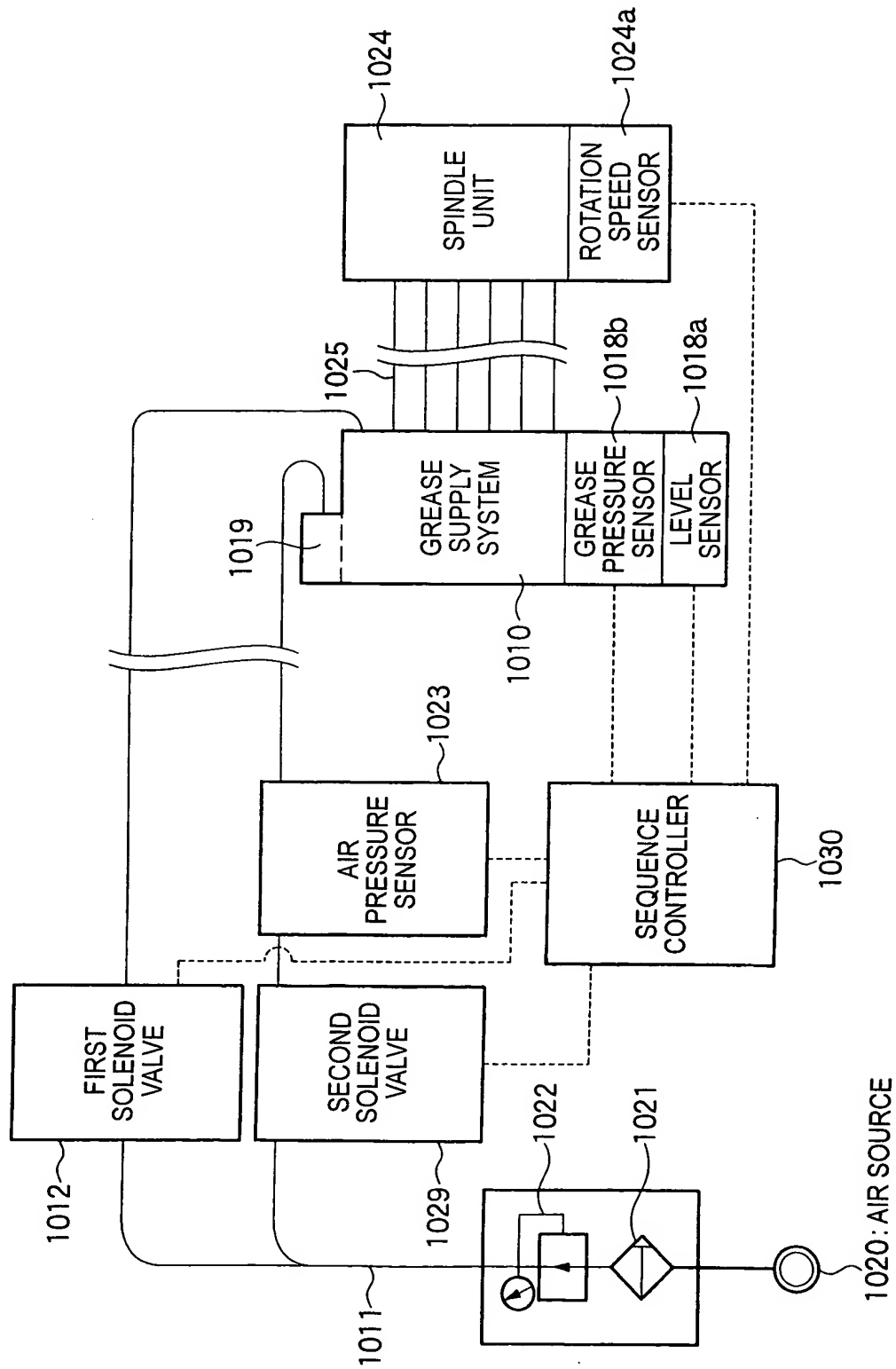


FIG. 63

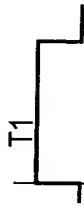


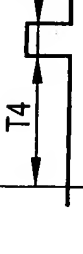
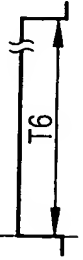
NAME	OPERATION TIMING AND MONITORING TIME	OPERATION		CONTENTS
SECOND SOLENOID VALVE	ON 	—		—
FIRST SOLENOID VALVE	ON 	—		—
AIR PRESSURE SENSOR	ON 	OFF		REDUCTION OF THE AIR PRESSURE
GREASE PRESSURE SENSOR	ON 	OFF		REDUCTION OF THE GREASE TANK PRESSURE
LEVEL SENSOR	ON 	ON		LACK OF A RESIDUAL AMOUNT IN THE GREASE TANK

FIG. 64

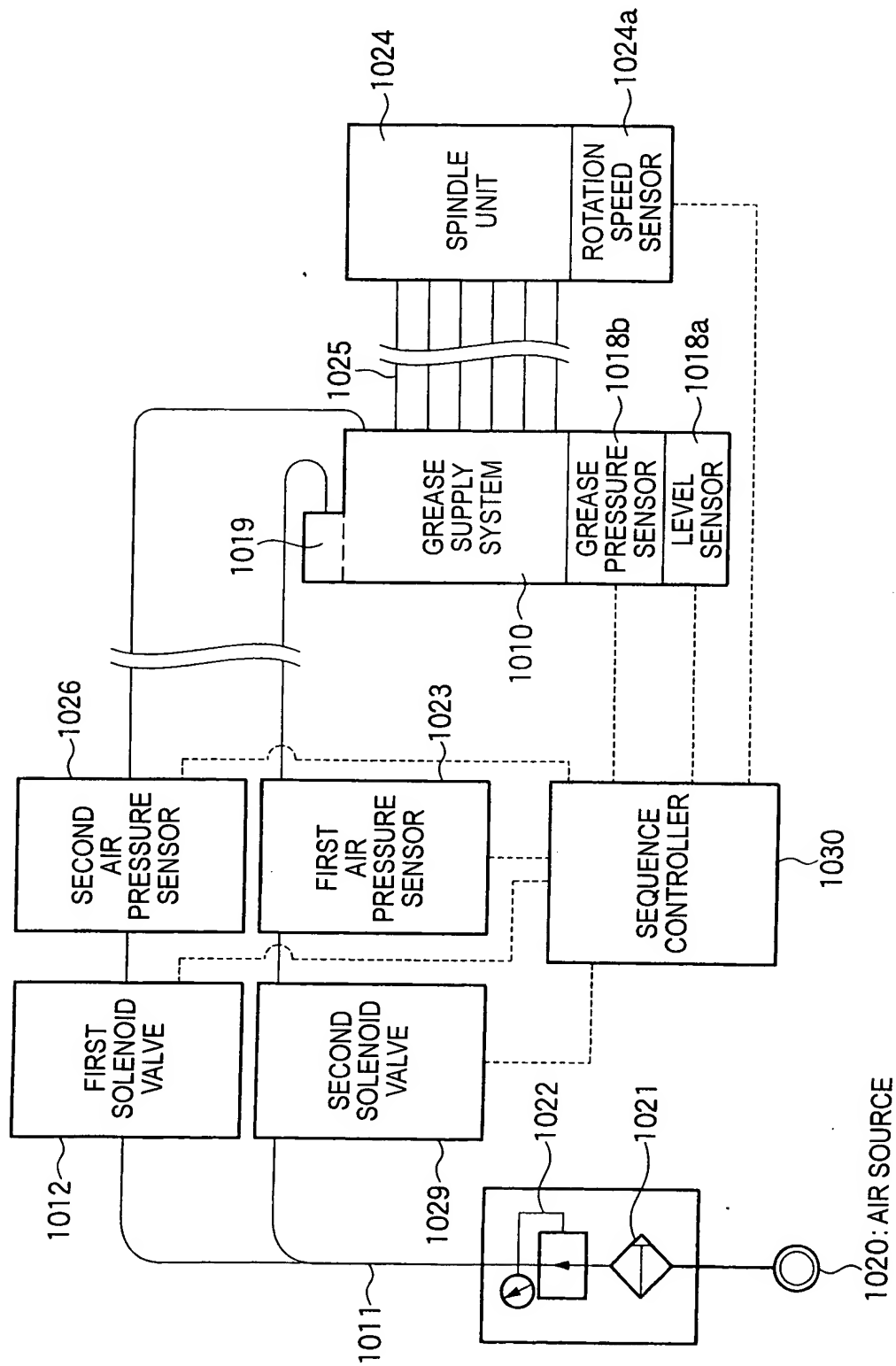


FIG. 65






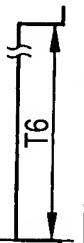
NAME	OPERATION TIMING AND MONITORING TIME	OPERATION		CONTENTS
SECOND SOLENOID VALVE	ON 	—	—	—
FIRST SOLENOID VALVE	ON 	—	—	—
FIRST AIR PRESSURE SENSOR	ON 	OFF	REDUCTION OF THE AIR PRESSURE	
SECOND AIR PRESSURE SENSOR	ON 	OFF	REDUCTION OF THE AIR PRESSURE	
GREASE PRESSURE SENSOR	ON 	OFF	REDUCTION OF THE GREASE TANK PRESSURE	
LEVEL SENSOR	ON 	ON	LACK OF A RESIDUAL AMOUNT IN THE GREASE TANK	

FIG. 66

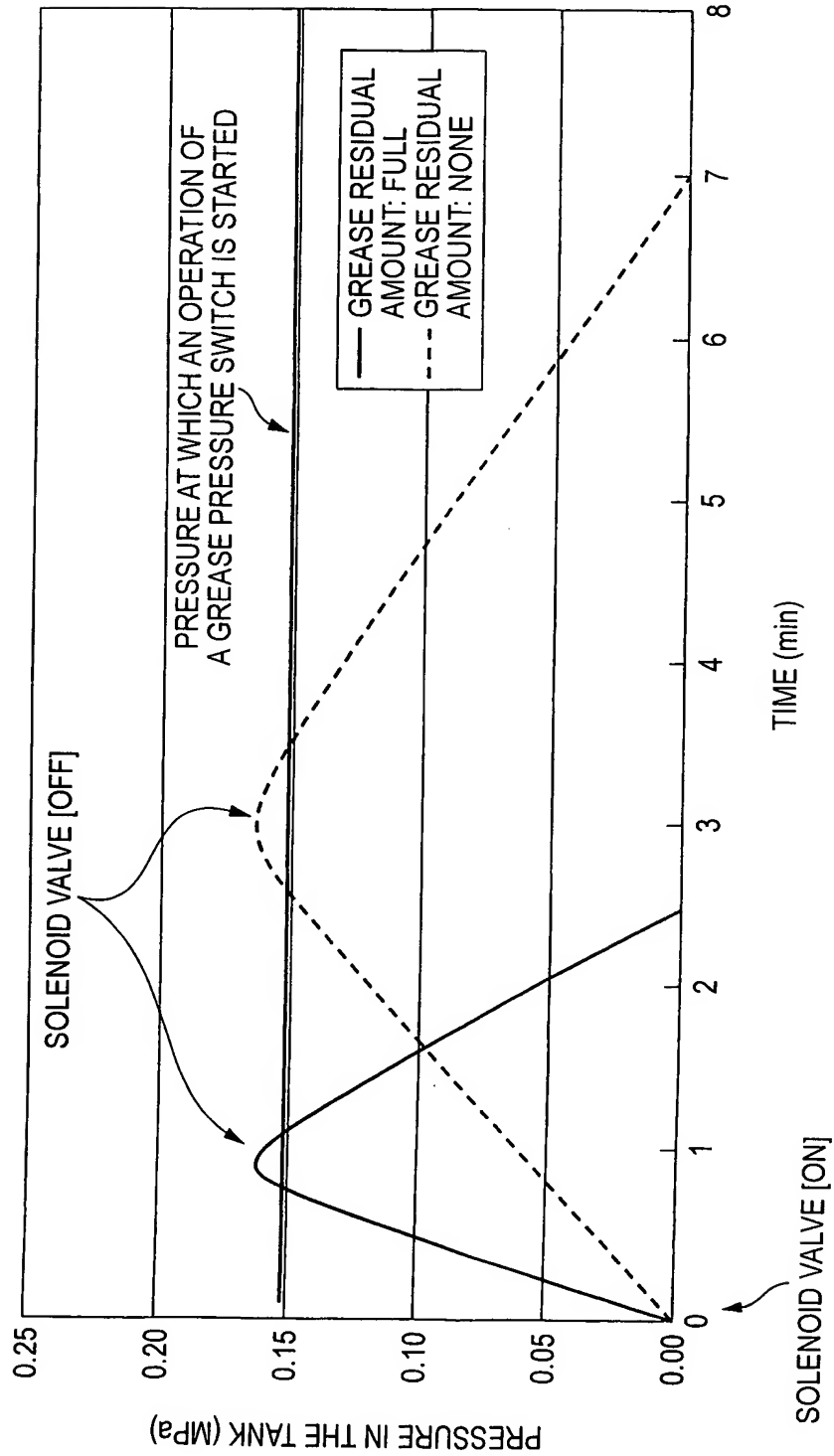


FIG. 67

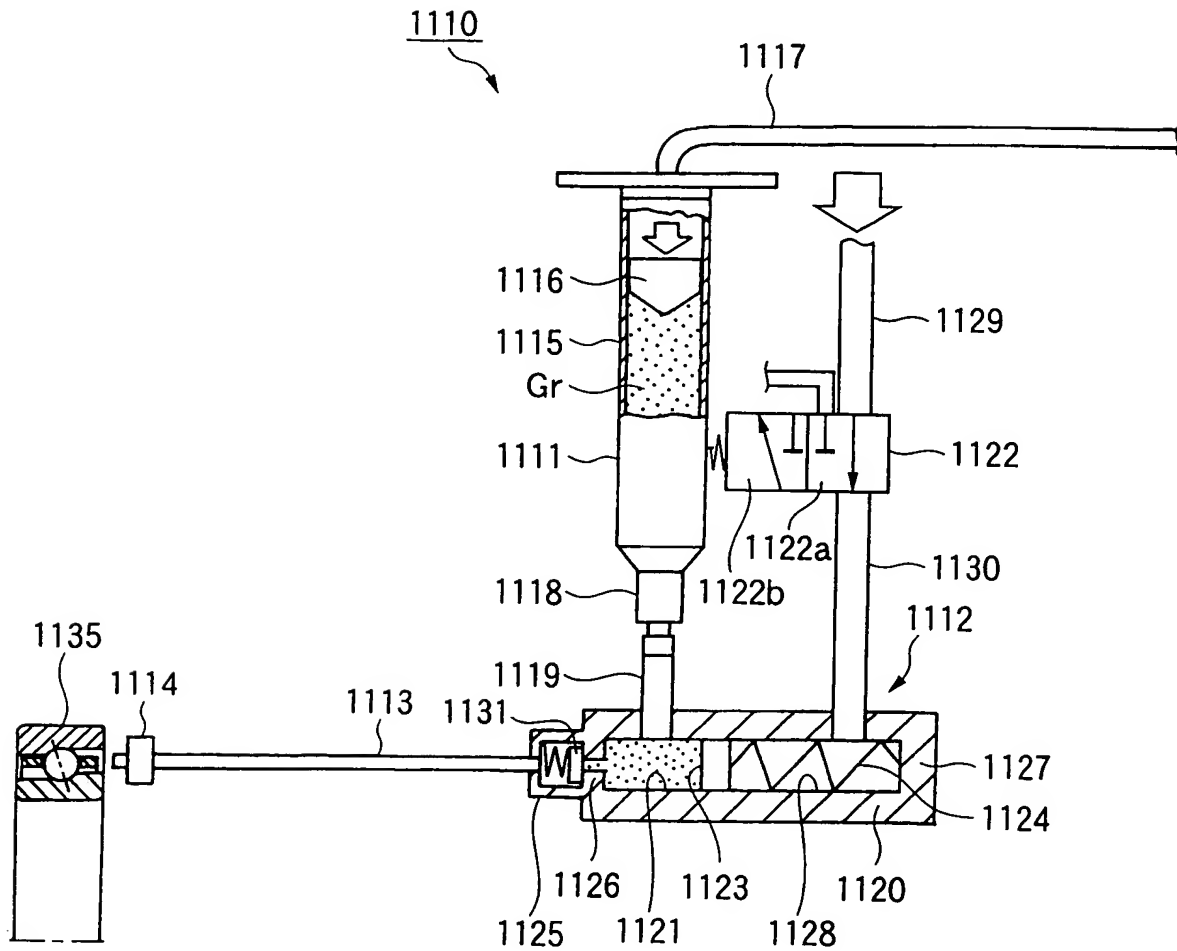


FIG. 68

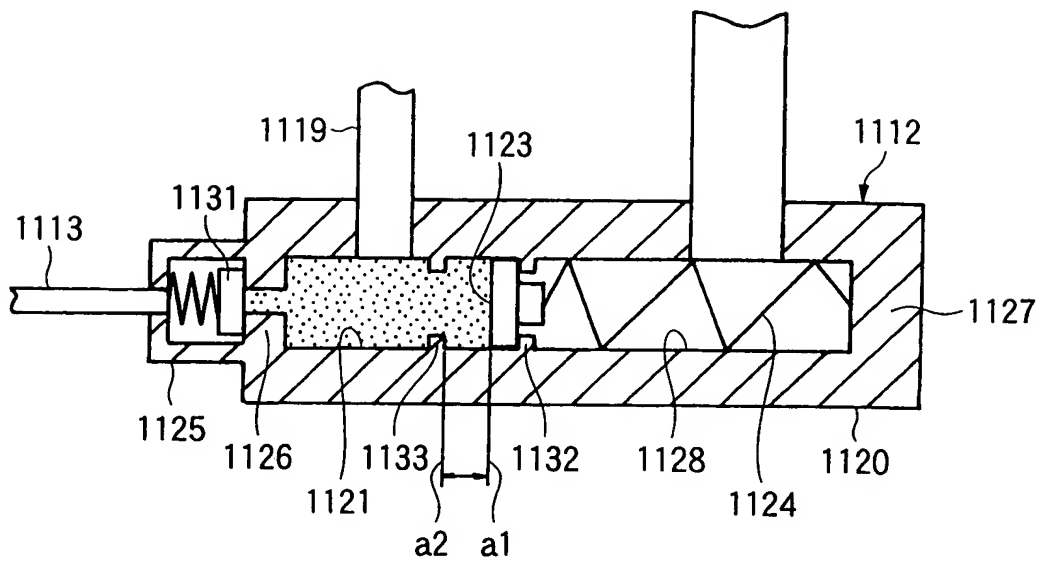


FIG. 69

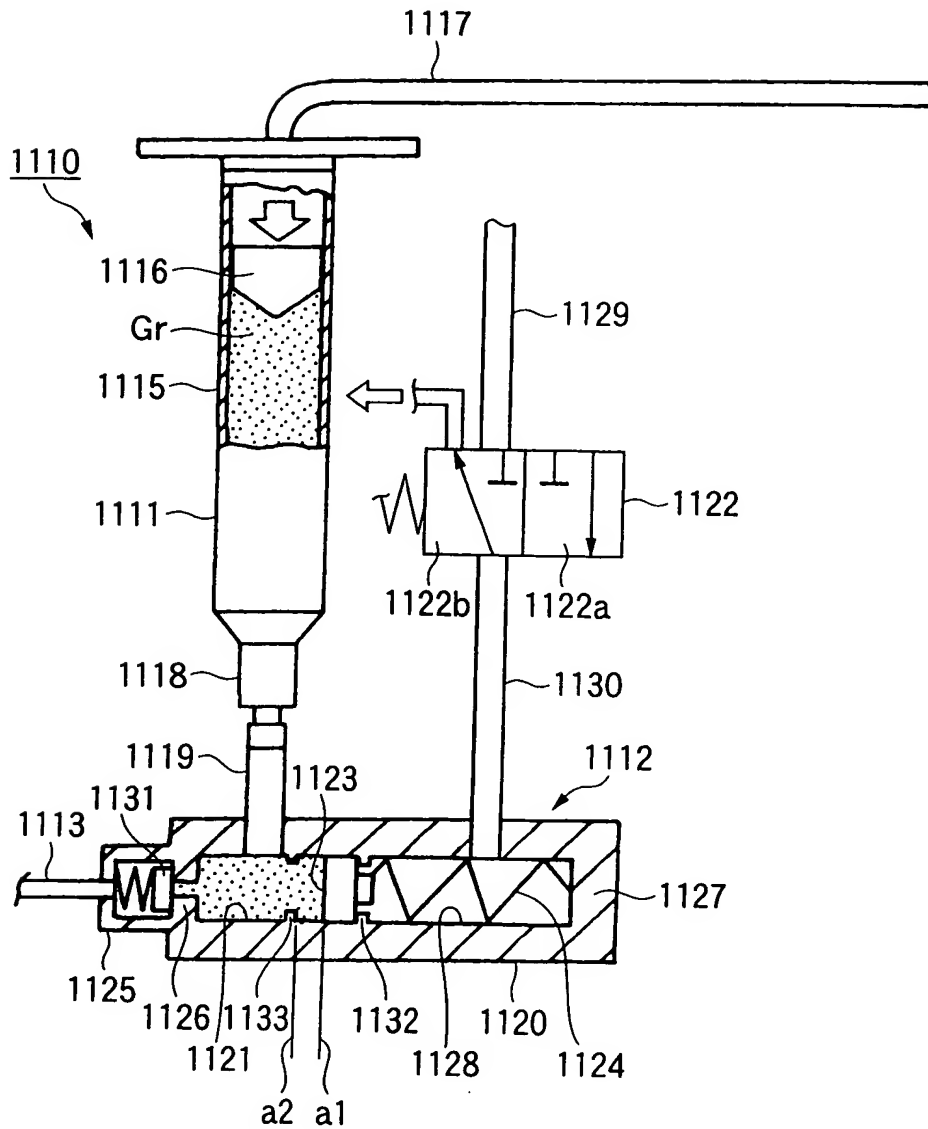


FIG. 70

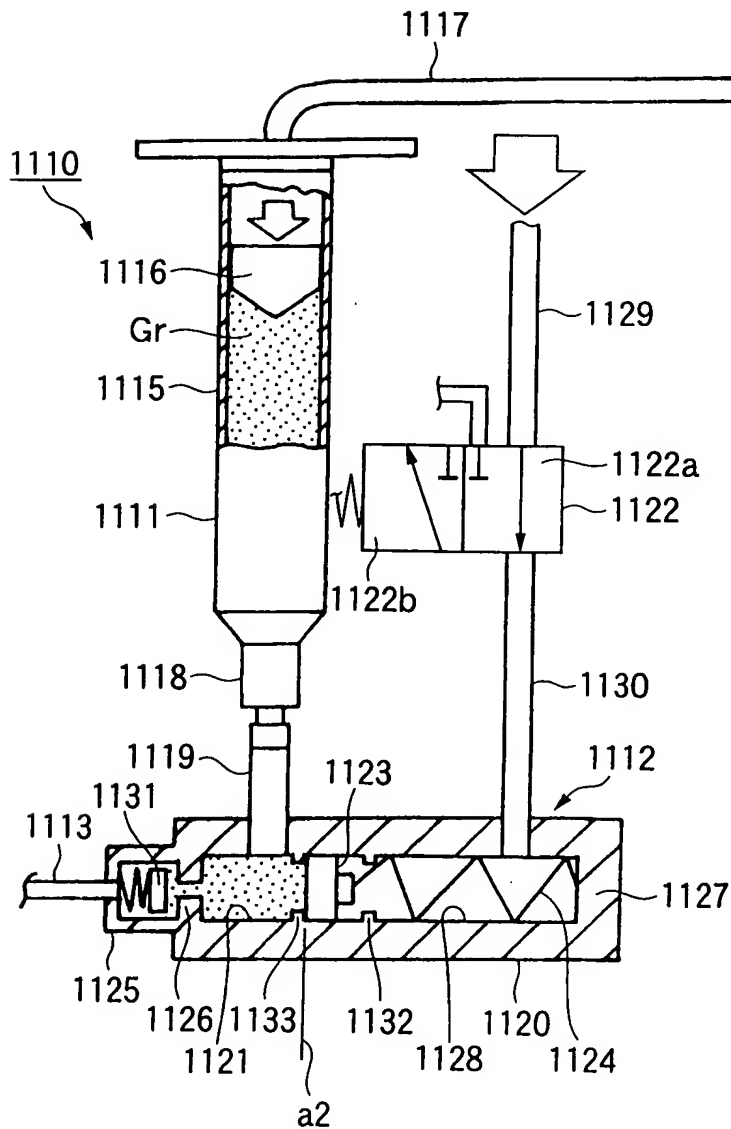
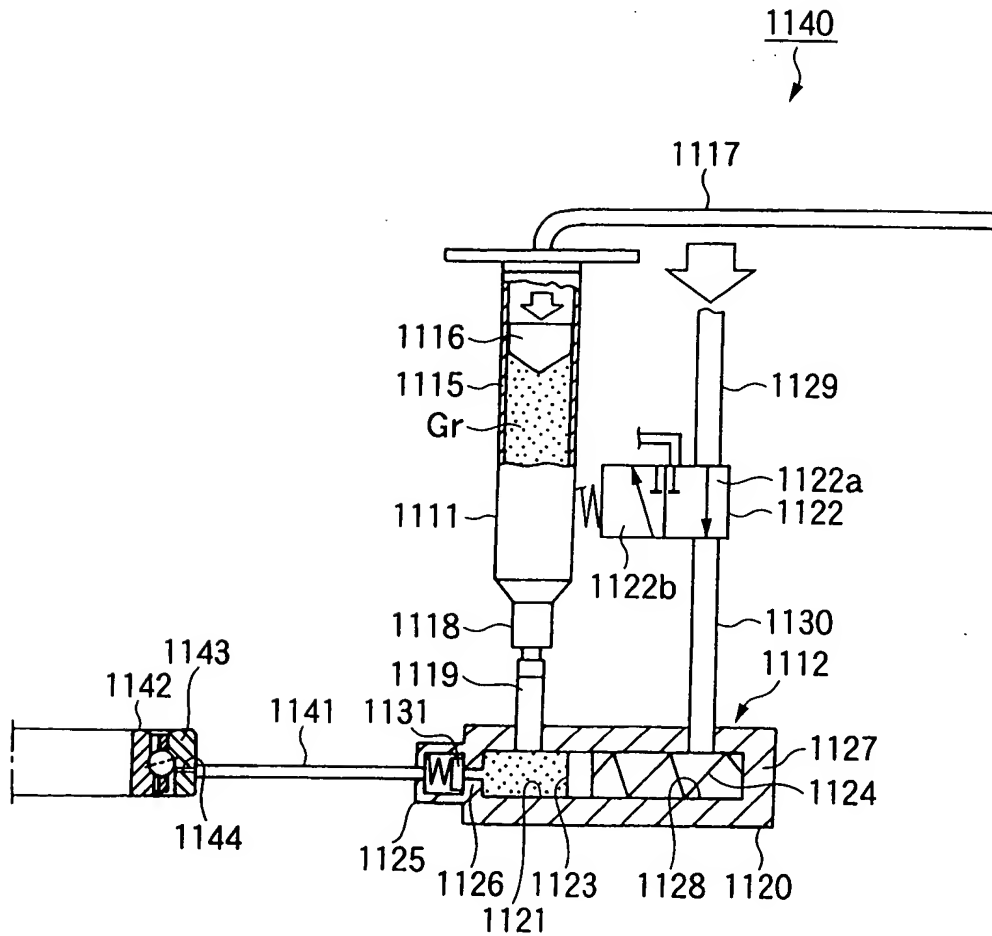
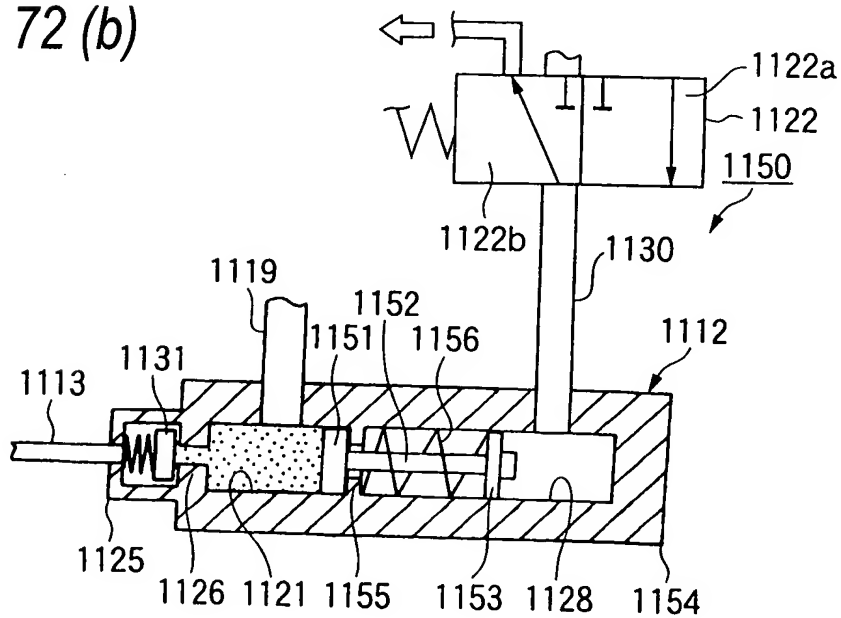


FIG. 71





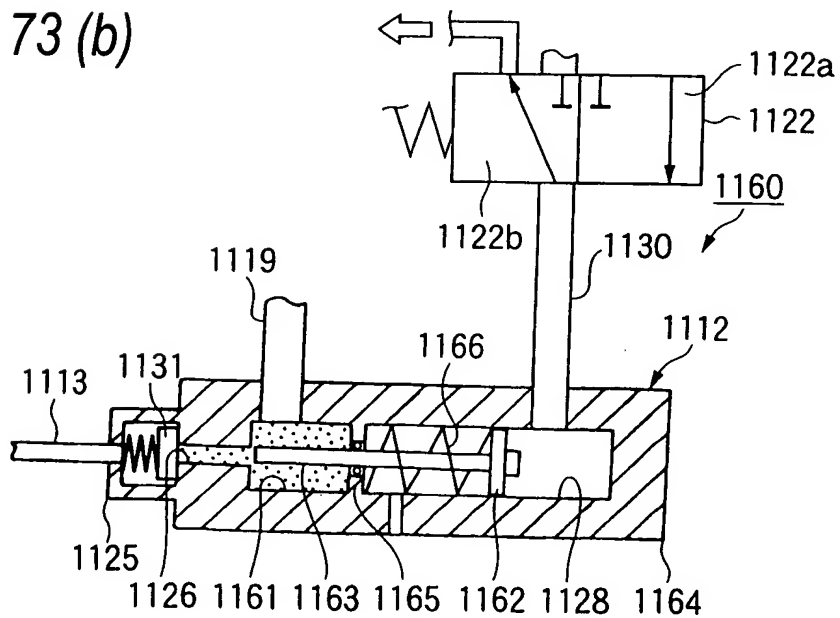


FIG. 74

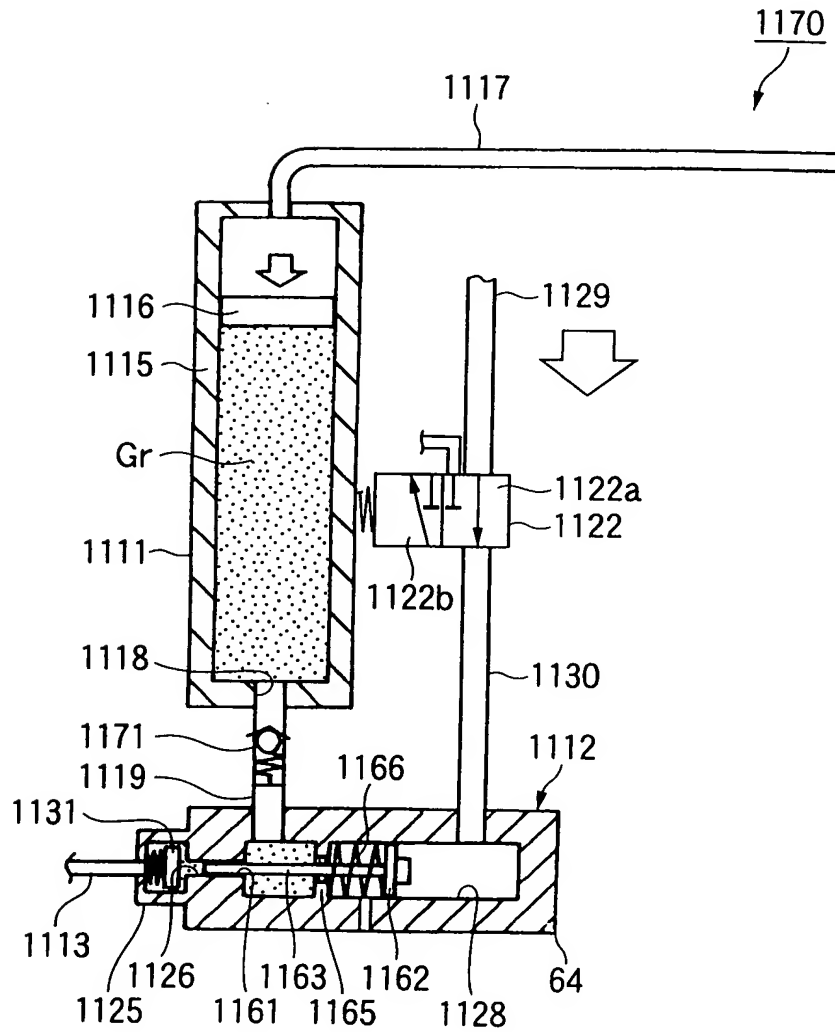


FIG. 75

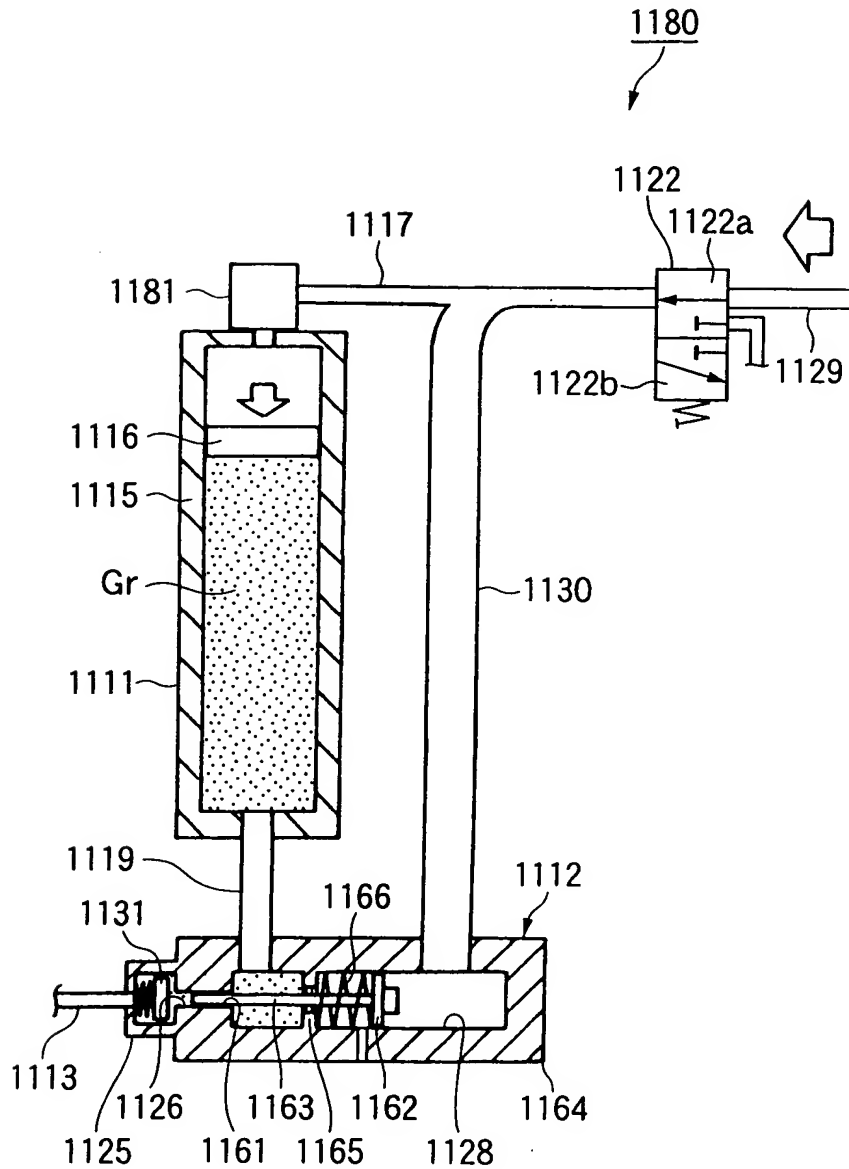


FIG. 76

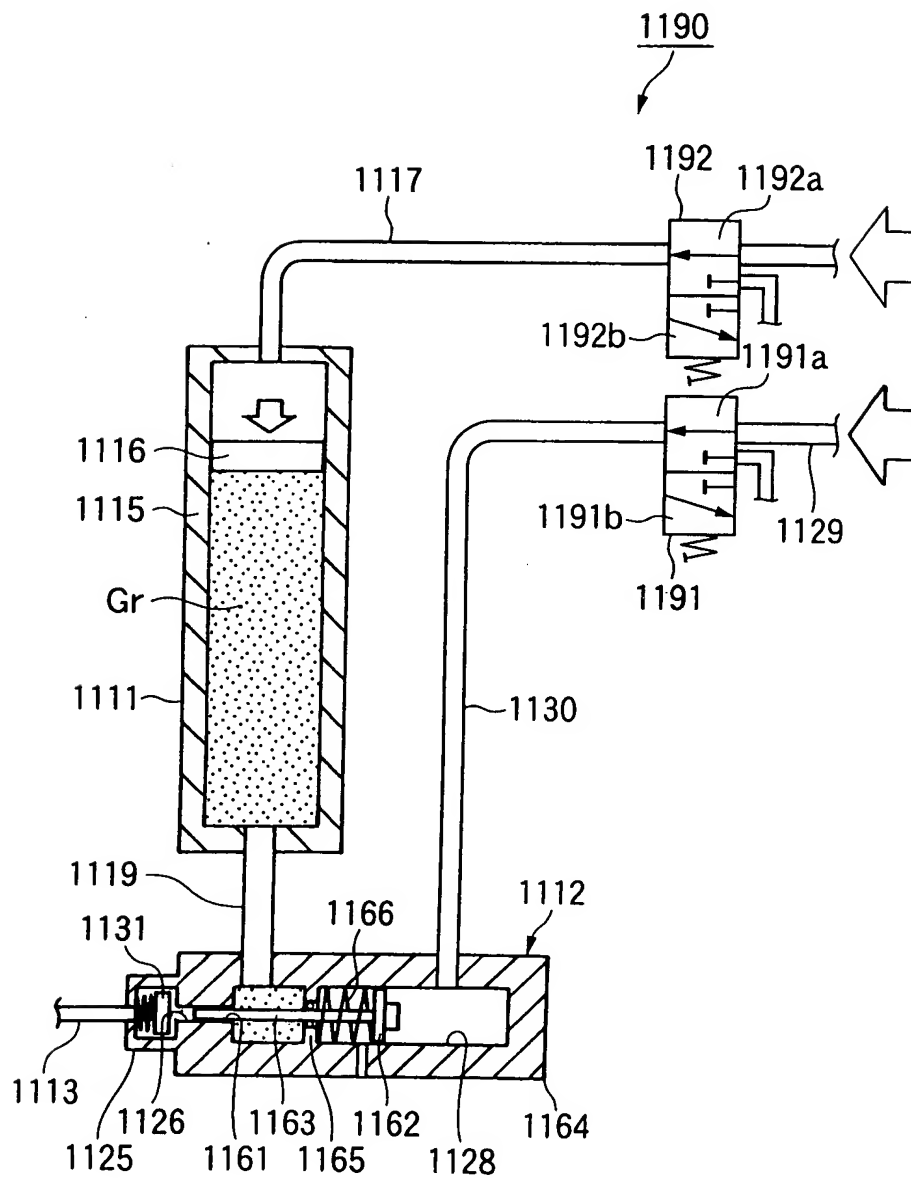


FIG. 77

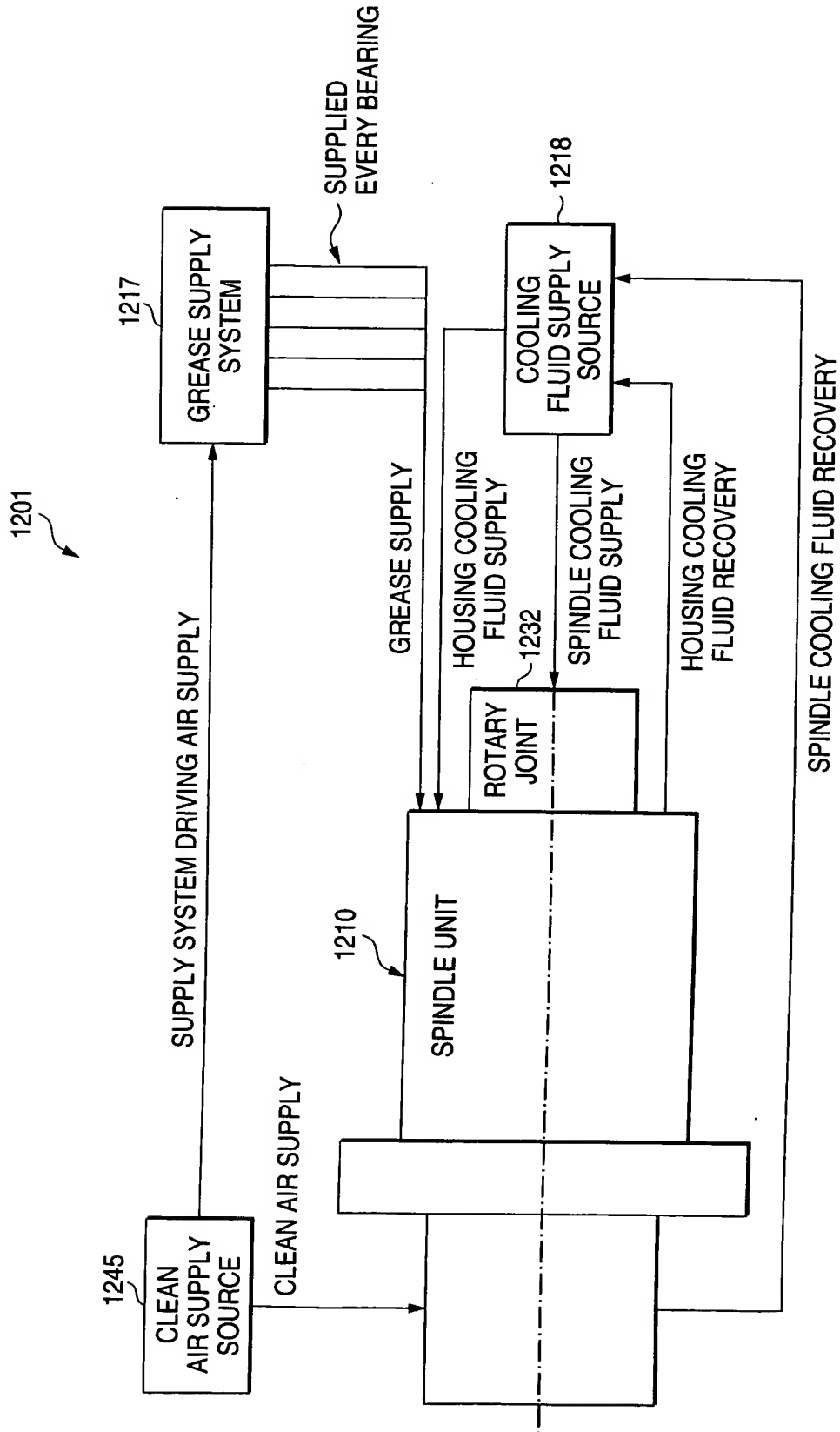


FIG. 78

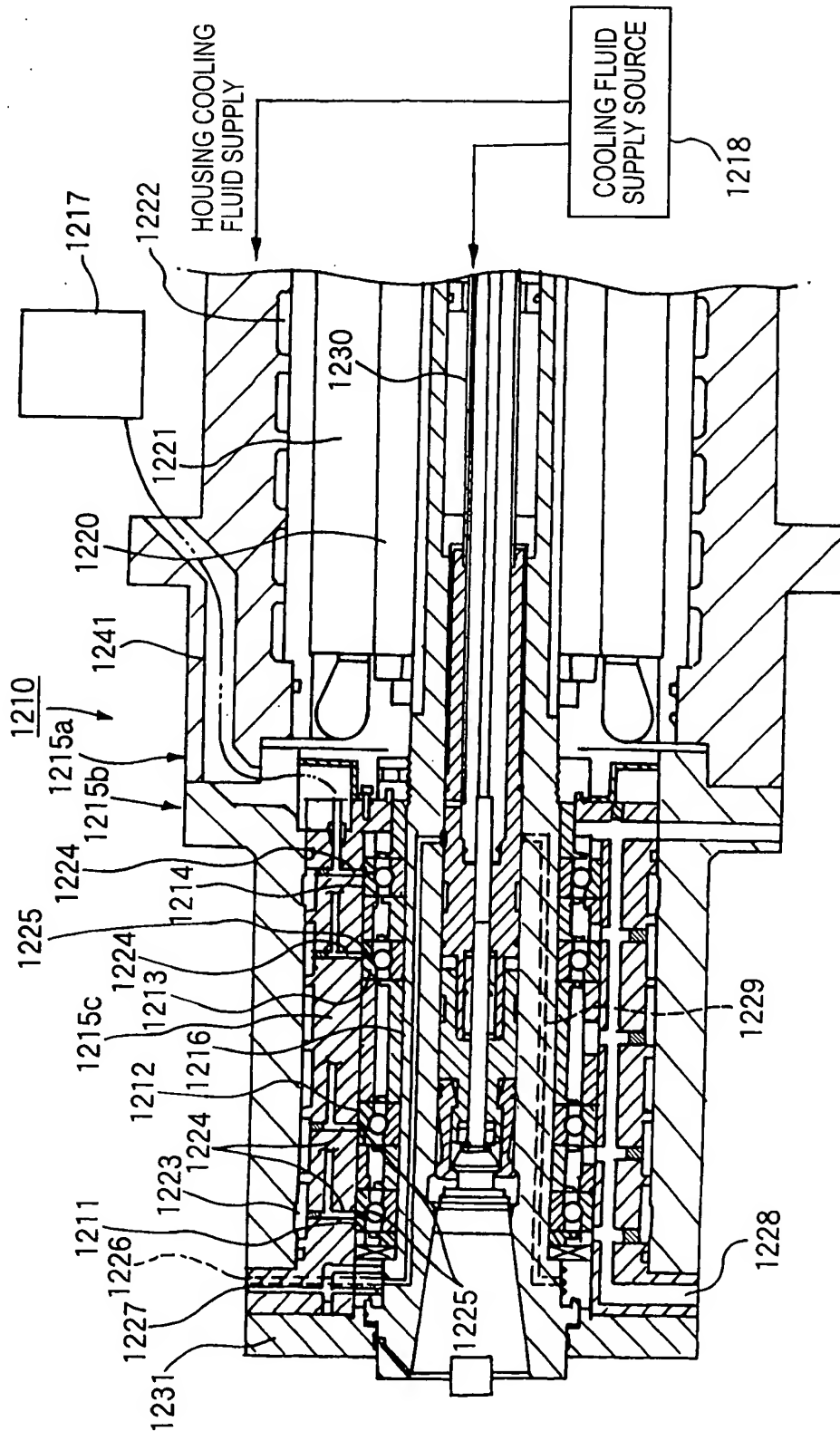


FIG. 79

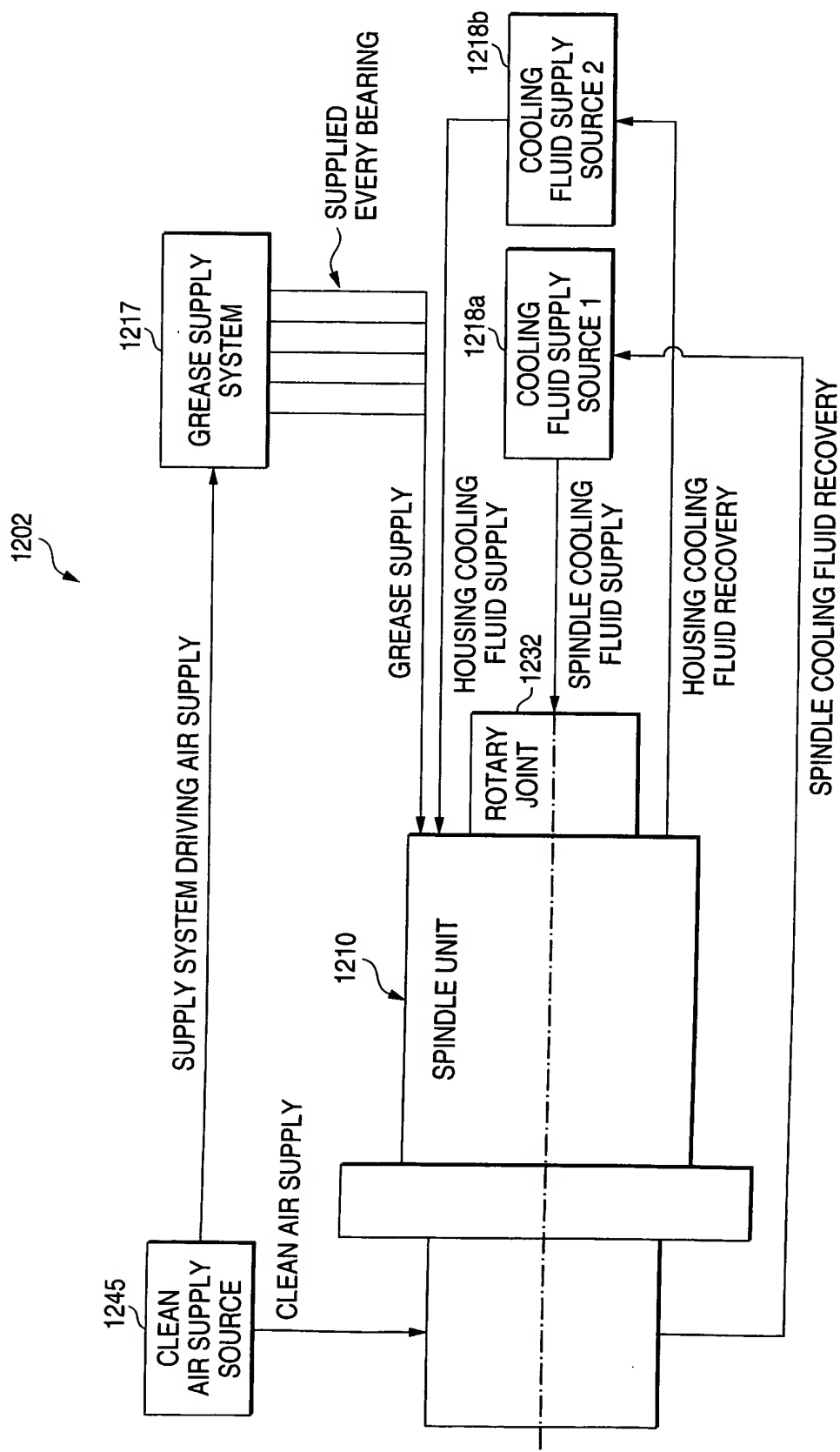


FIG. 80

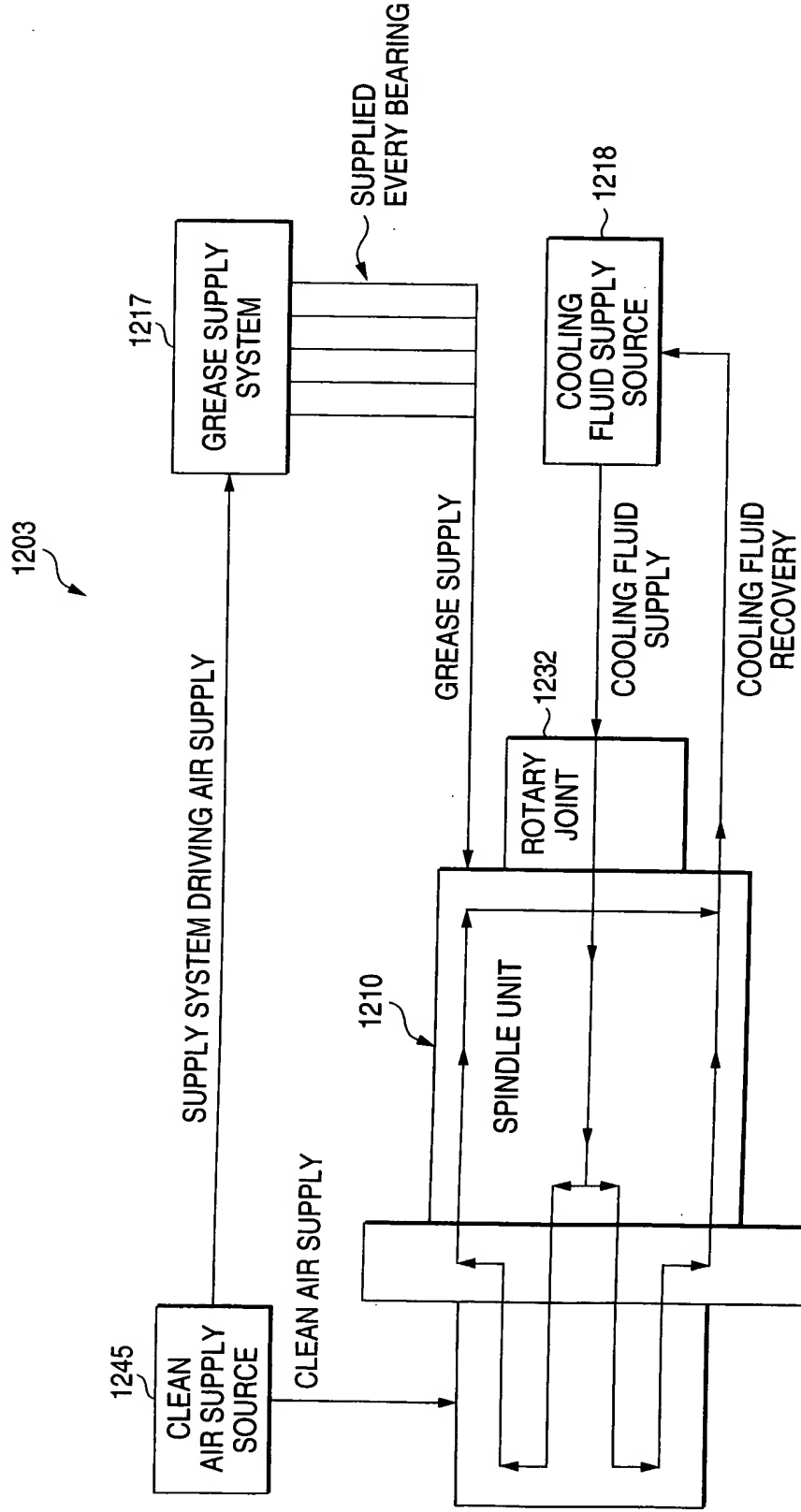


FIG. 81

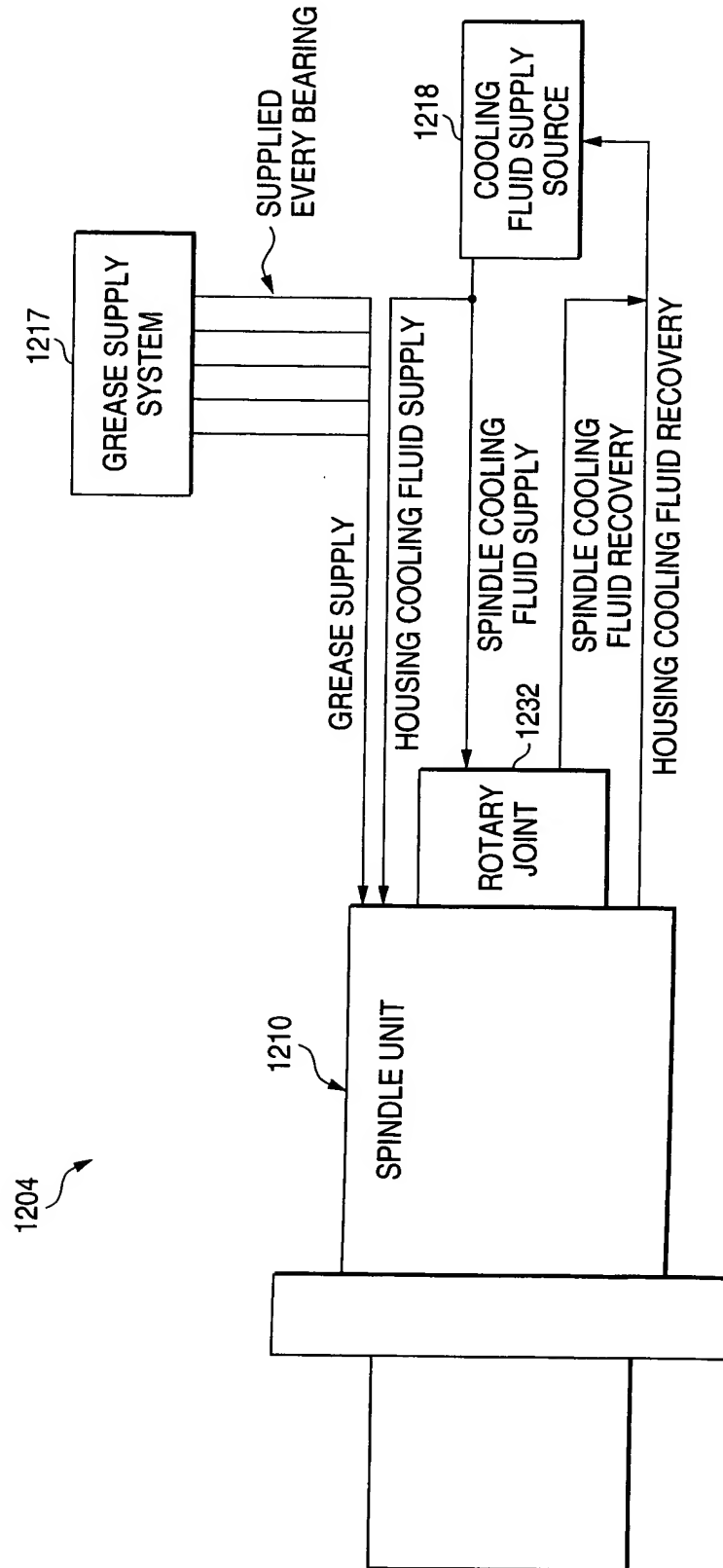


FIG. 82

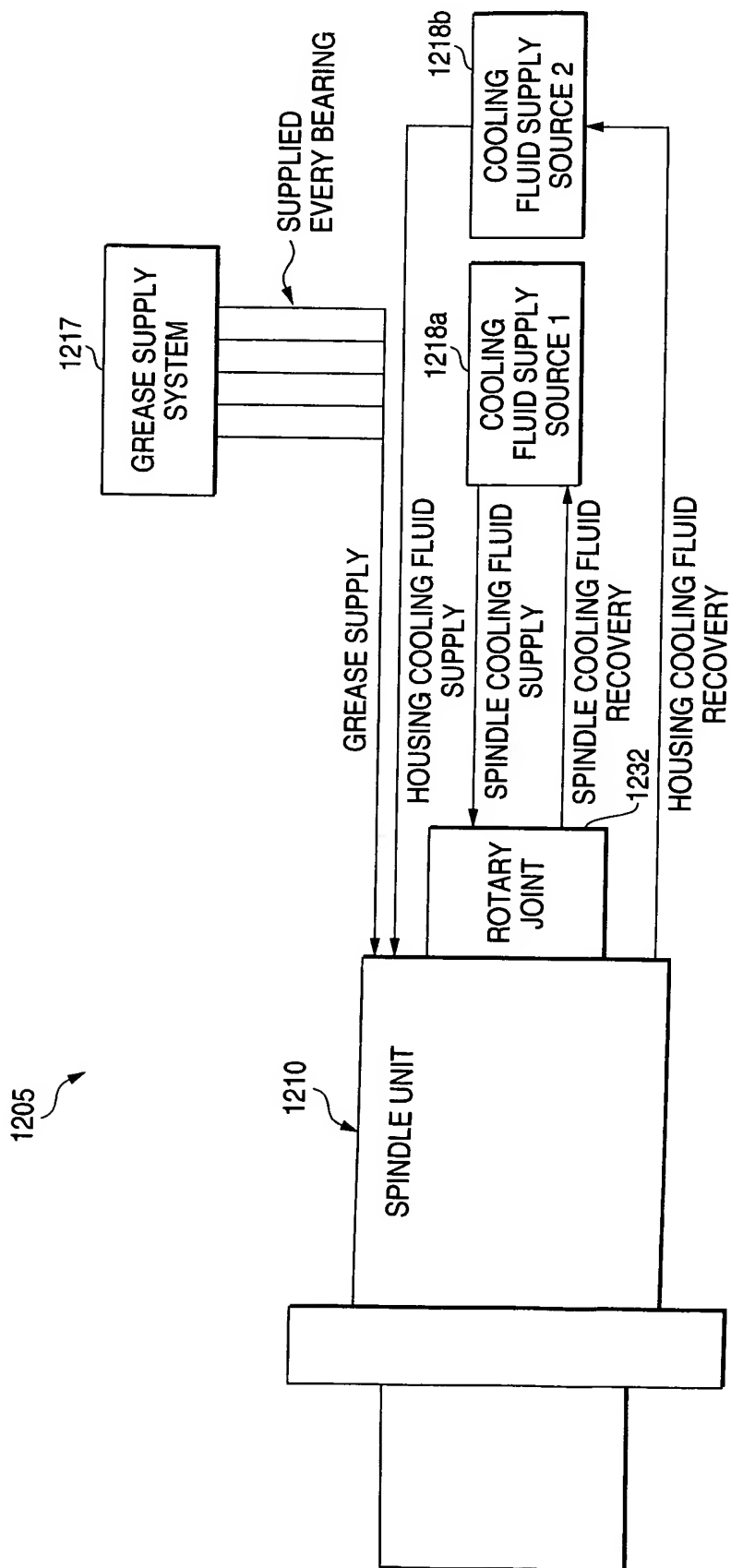


FIG. 83

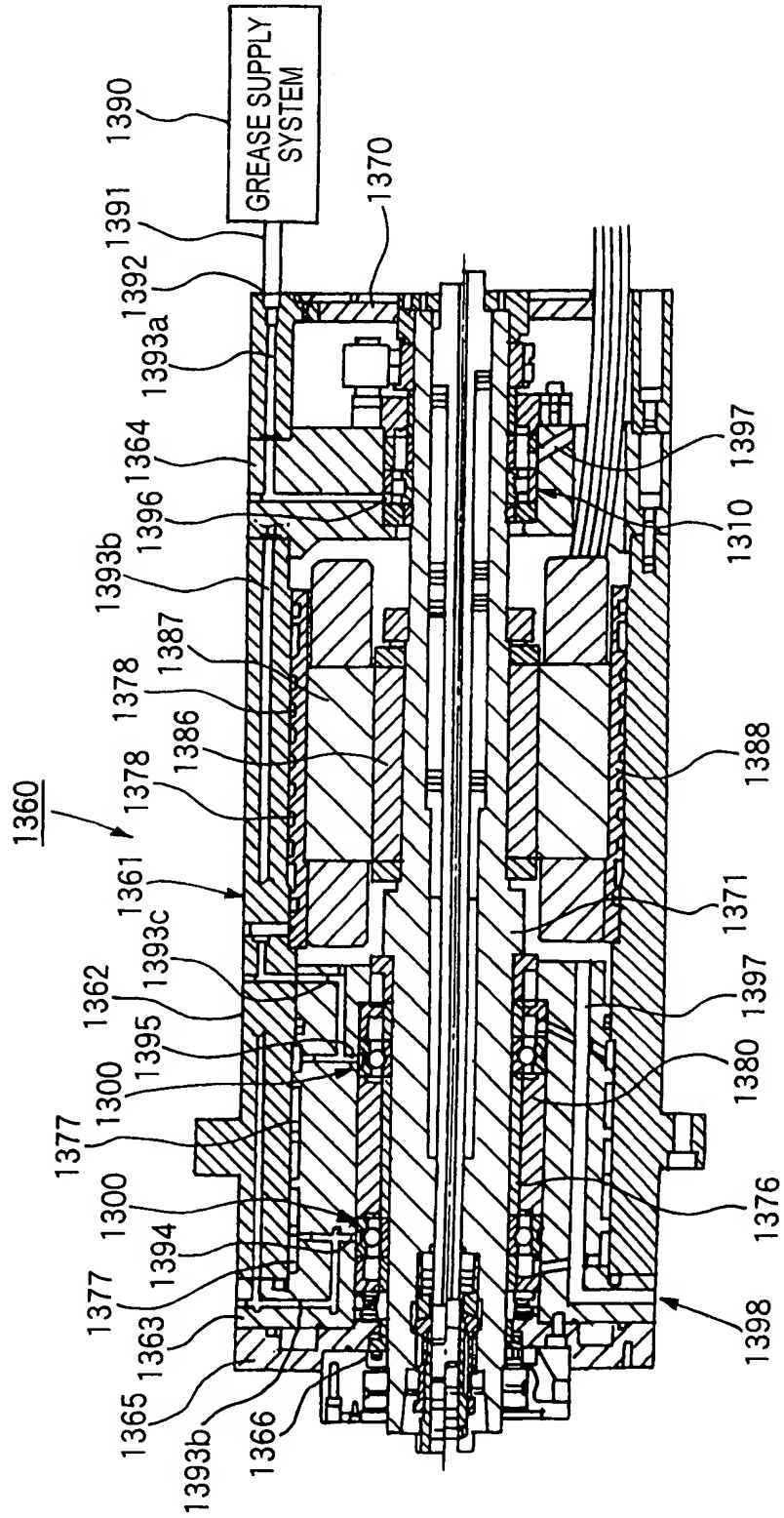


FIG. 84

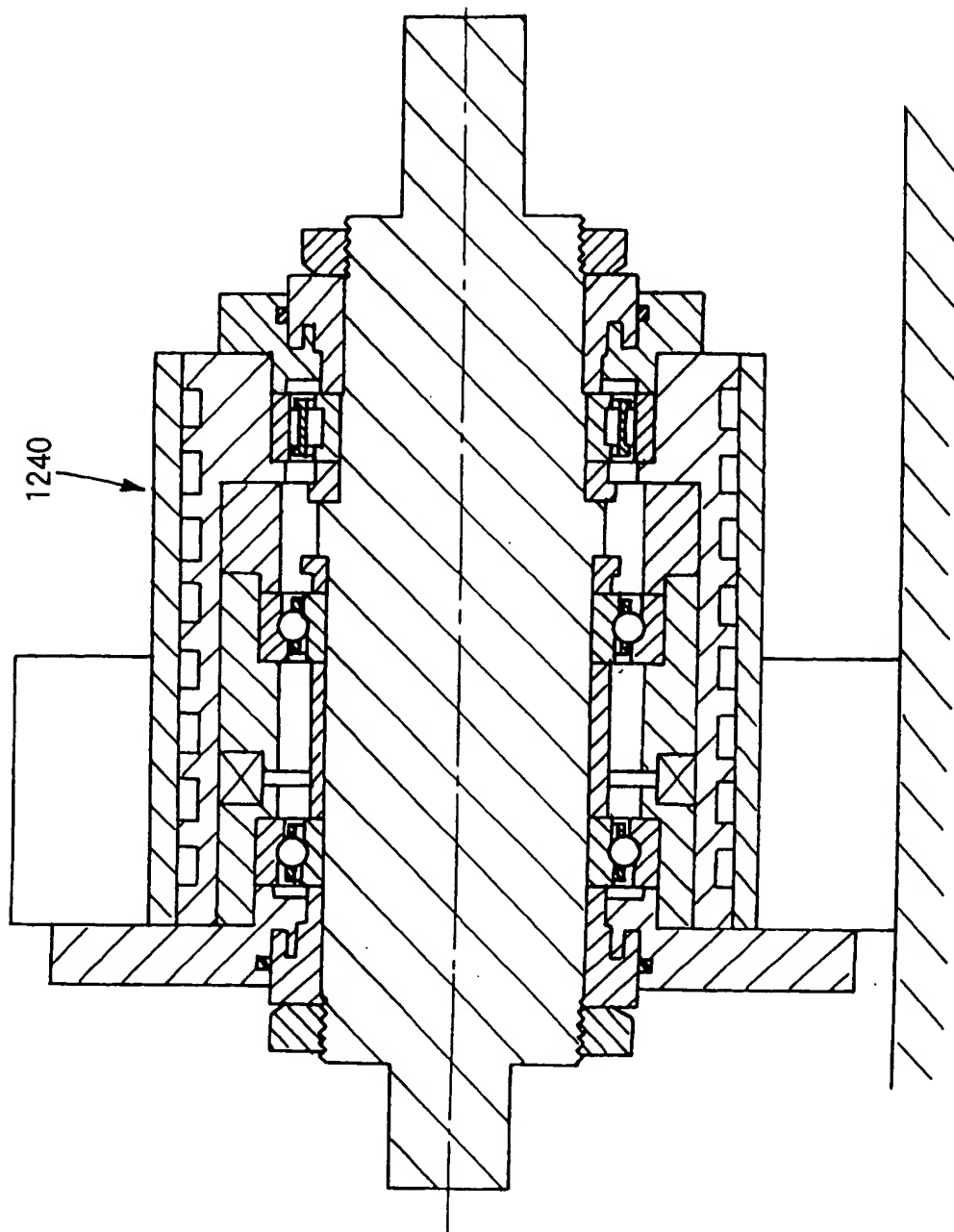


FIG. 85

TEST NO.	1	2	3
CONSTANT PRELOAD (N)	1870	1870	1870
AMOUNT INITIALLY SEALED OF GREASE (%)	1	5	15
AMOUNT INITIALLY SEALED OF GREASE (cc)	0.15	0.75	2.25
COOLING (COOLING OIL TEMPERATURE)	APPLIED (25°C)	APPLIED (25°C)	APPLIED (25°C)
BEARING TEMPERATURE (°C)	42	42	42
ENDURANCE TIME (hr)	28.5	118.5	260

FIG. 86

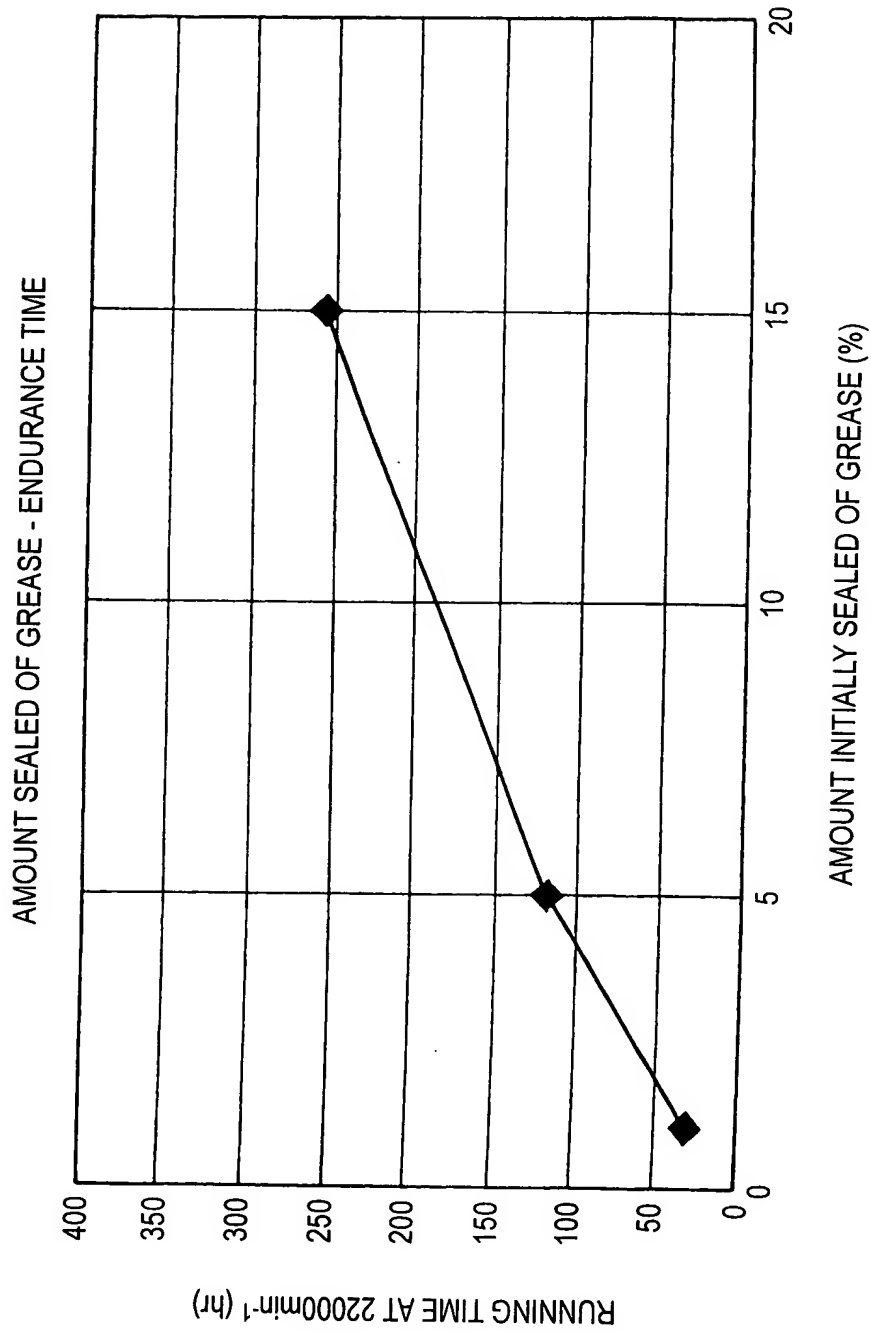


FIG. 87

TEST NO.	1	4	5
CONSTANT PRELOAD (N)	1870	1870	1870
AMOUNT INITIALLY SEALED OF GREASE (%)	1	1	1
AMOUNT INITIALLY SEALED OF GREASE (cc)	0.15	0.15	0.15
COOLING (COOLING OIL TEMPERATURE)	APPLIED (25°C)	APPLIED (20°C)	NOT APPLIED
BEARING TEMPERATURE (°C)	42	30	62
ENDURANCE TIME (hr)	28.5	56	8

ROLLING BEARING, GREASE SUPPLY SYSTEM,
SPRINDLE UNIT, GREASE SUPPLY METHOD, AND
GREASE SUPPLY PROGRAM
REPLACEMENT SHEET

FIG. 88

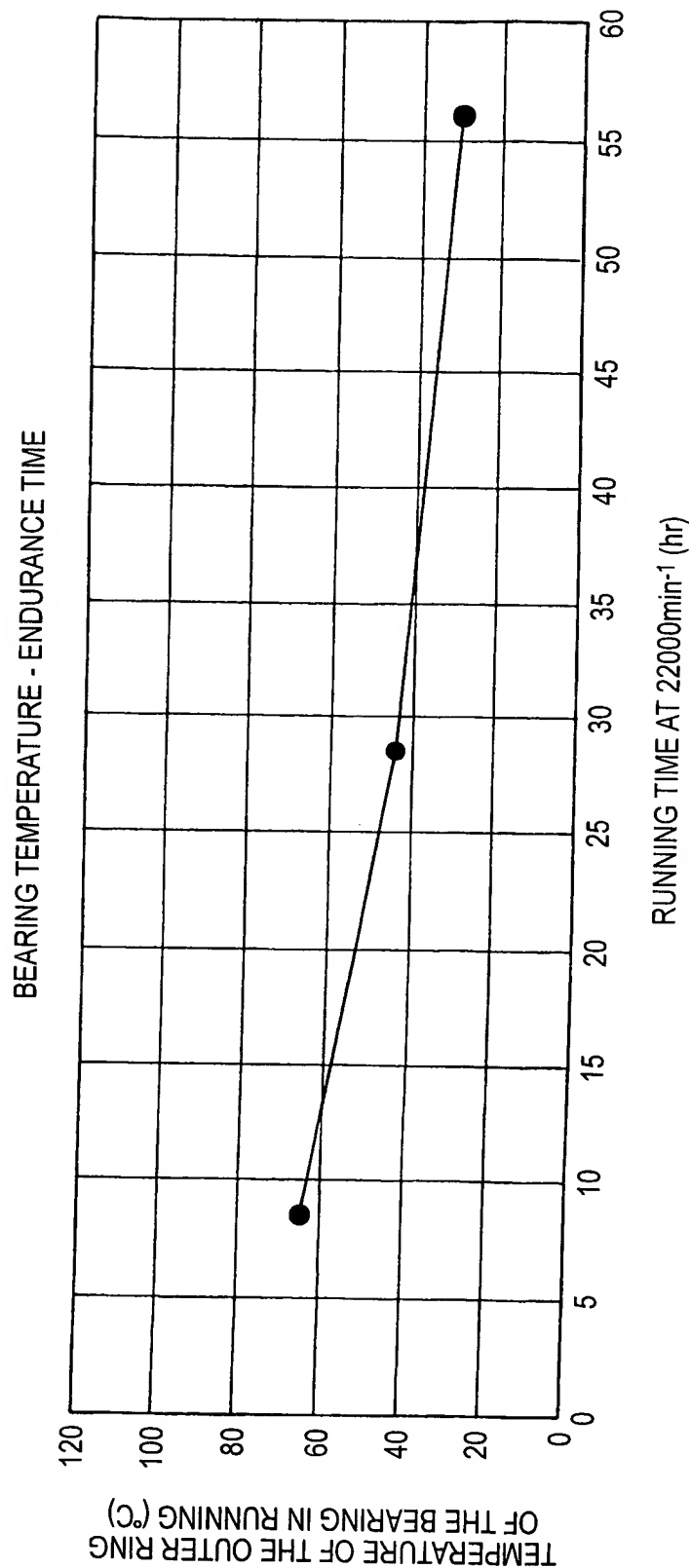


FIG. 89

TEST NO.	2	6	7	8
CONSTANT PRELOAD (N)	1870	2200	2600	3000
AMOUNT INITIALLY SEALED OF GREASE (%)	5	←	←	←
AMOUNT INITIALLY SEALED OF GREASE (cc)	0.75	←	←	←
COOLING (COOLING OIL TEMPERATURE)	APPLIED (25°C)	←	←	←
BEARING TEMPERATURE (°C)	42	←	←	←
ENDURANCE TIME (hr)	118.5	56	45	29

FIG. 90

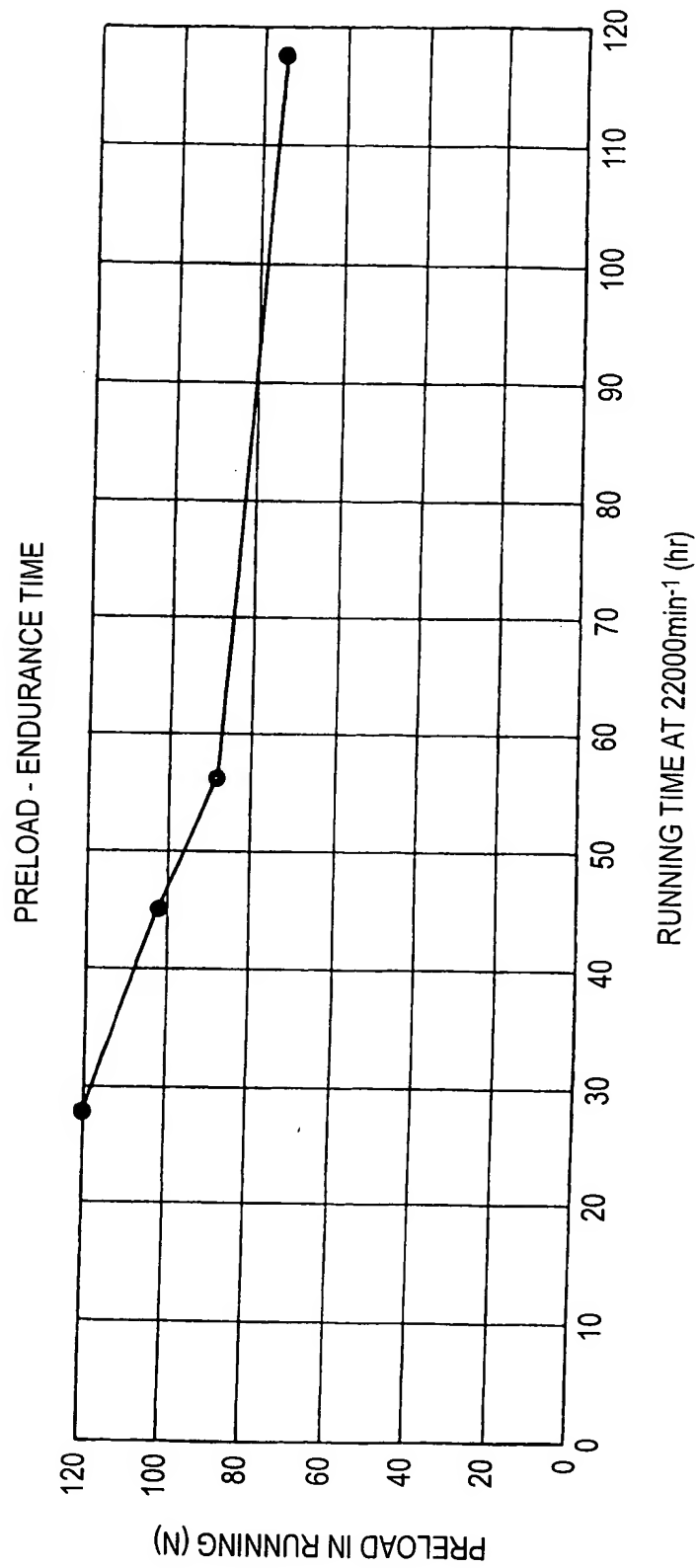


FIG. 91

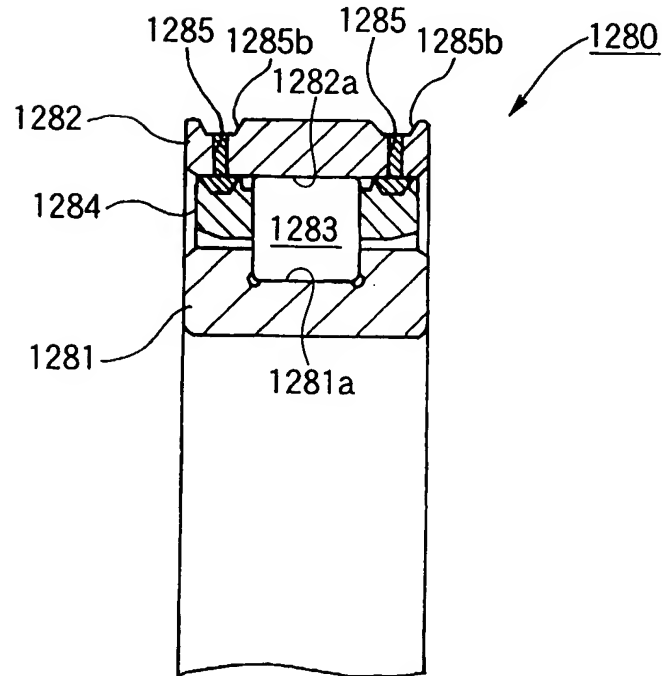


FIG. 92 (a)

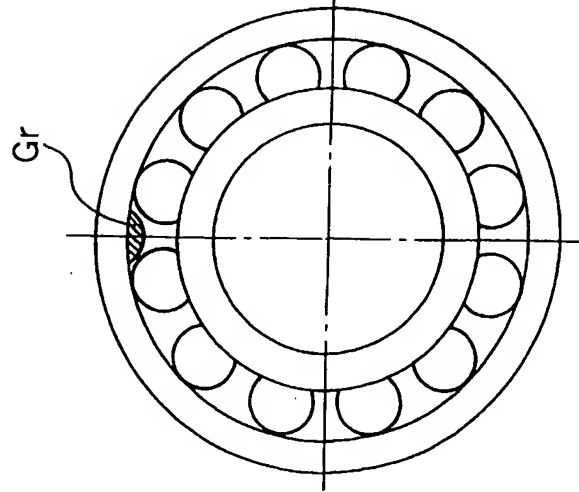


FIG. 92 (b)

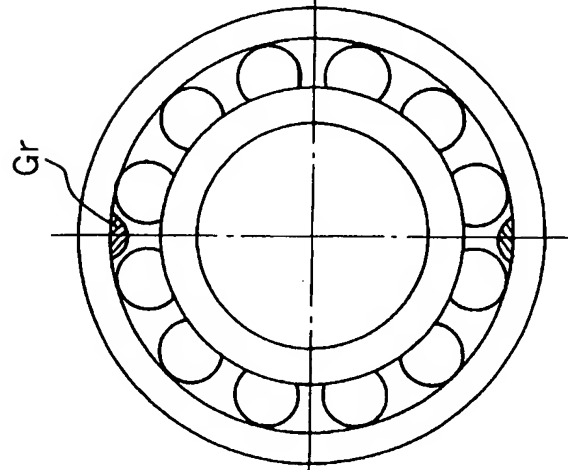


FIG. 92 (c)

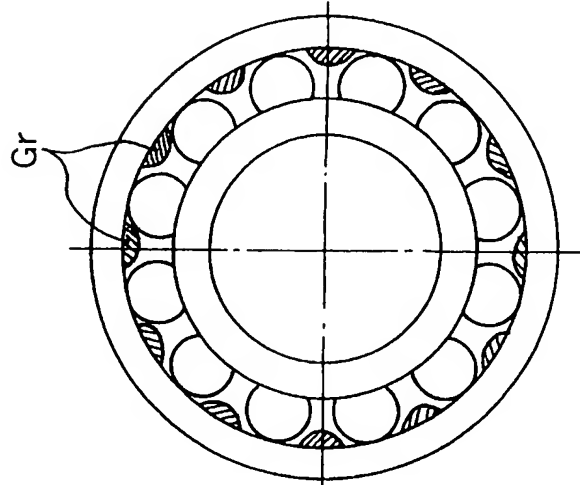


FIG. 93

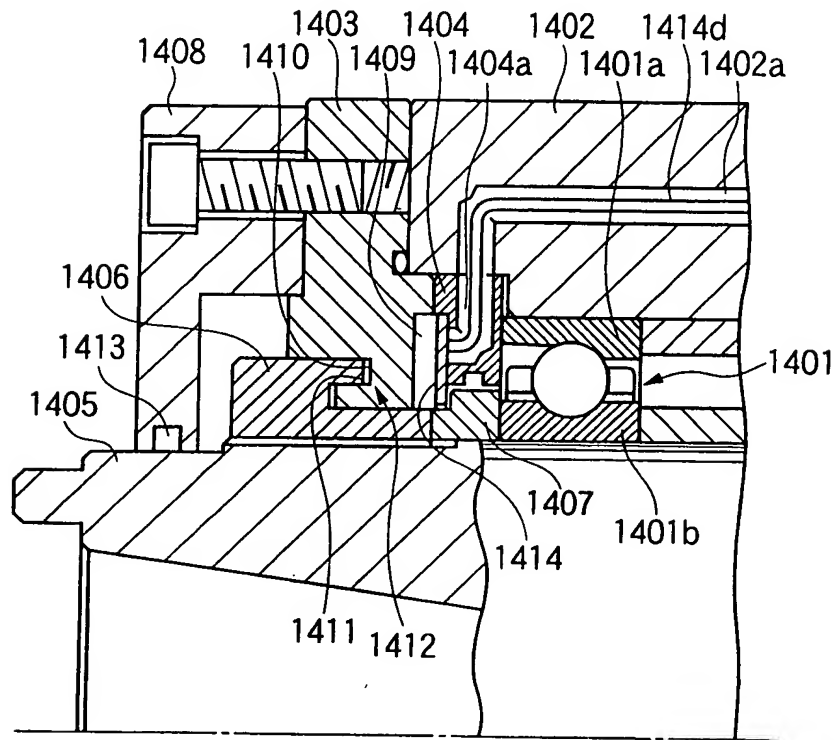


FIG. 94

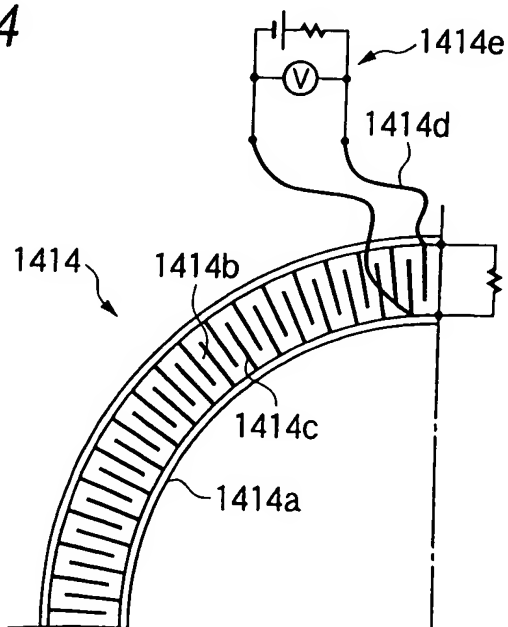


FIG. 95

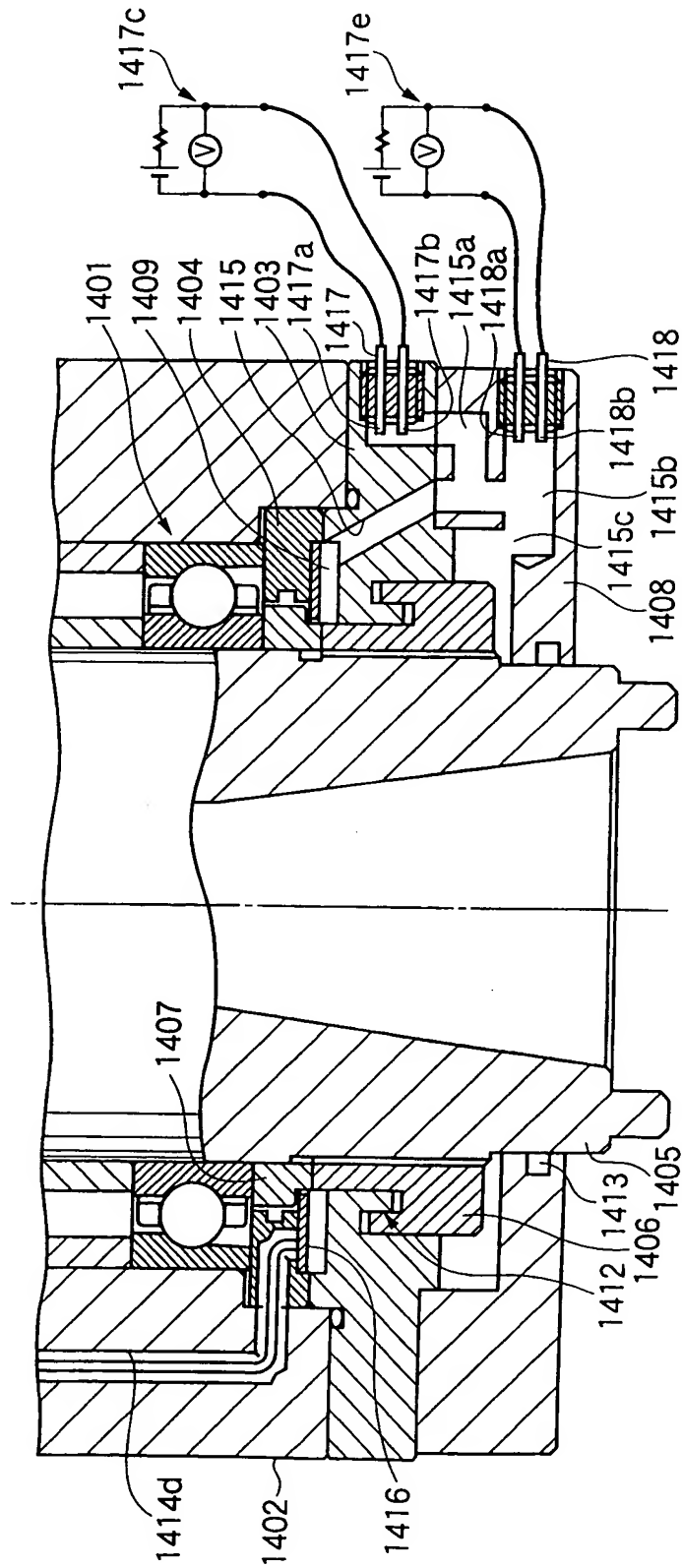


FIG. 96

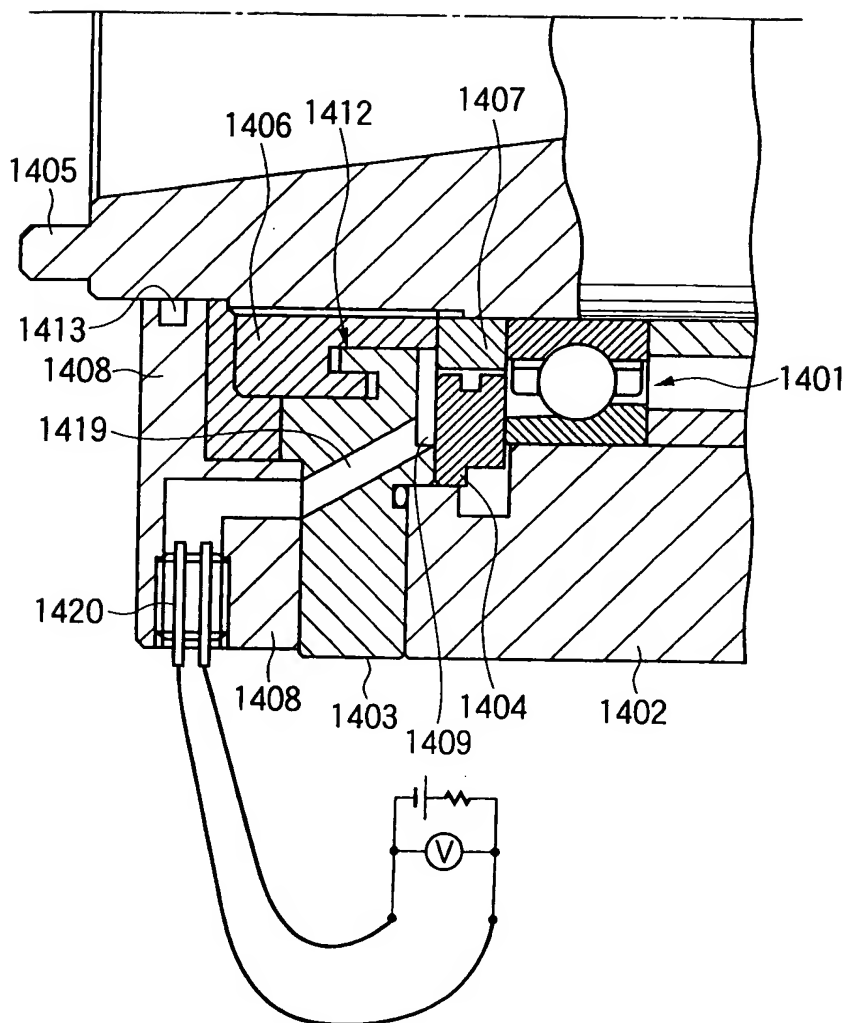


FIG. 97

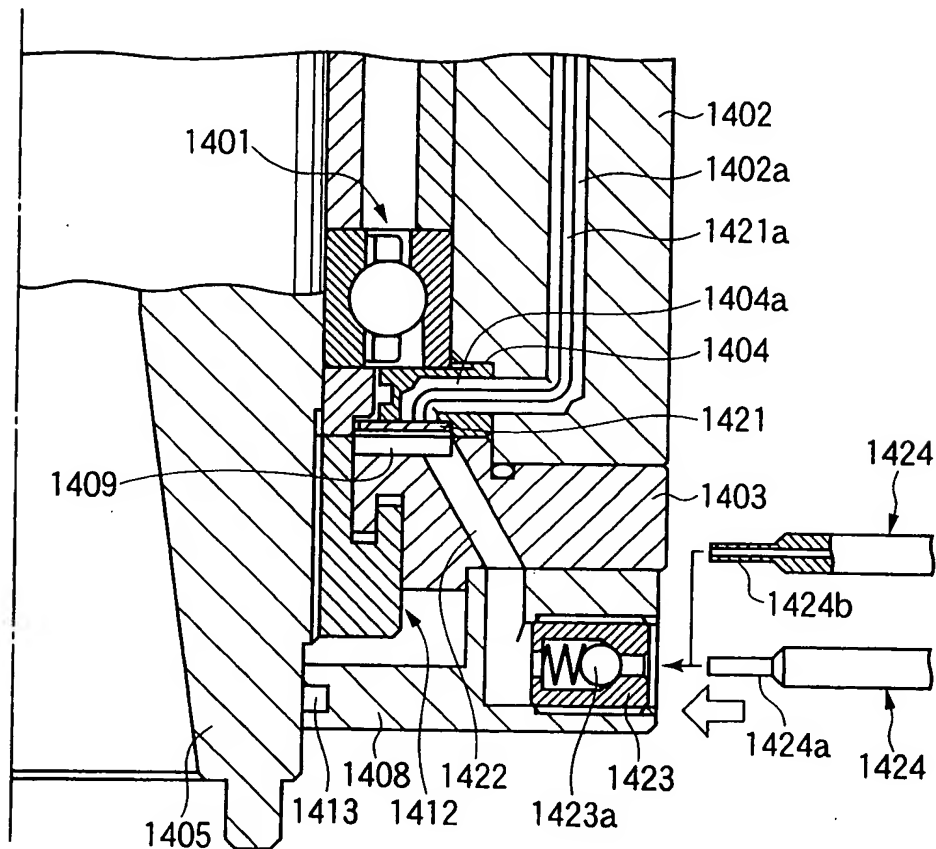


FIG. 98

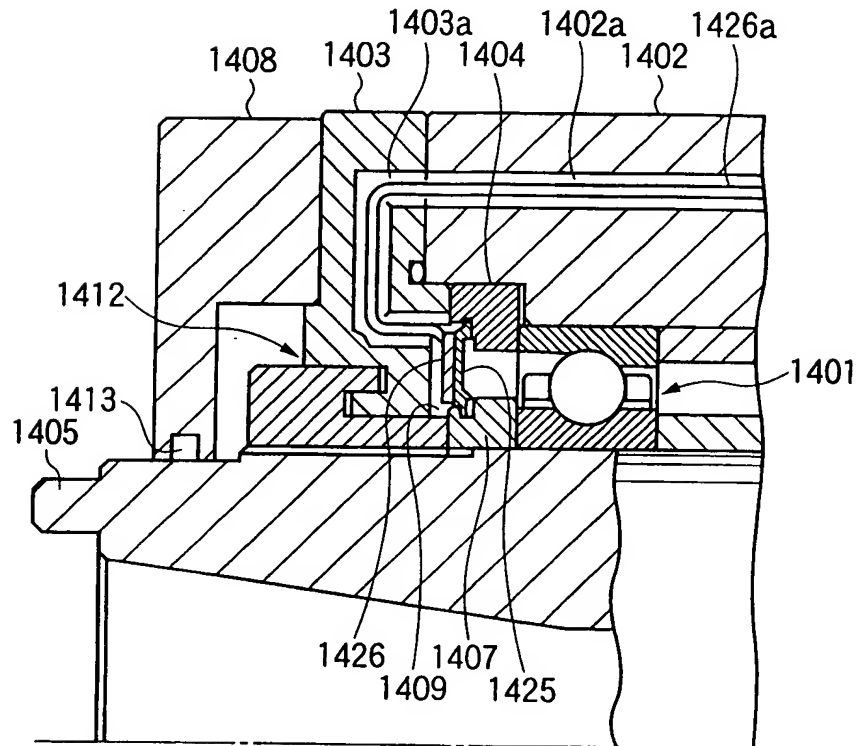


FIG. 99

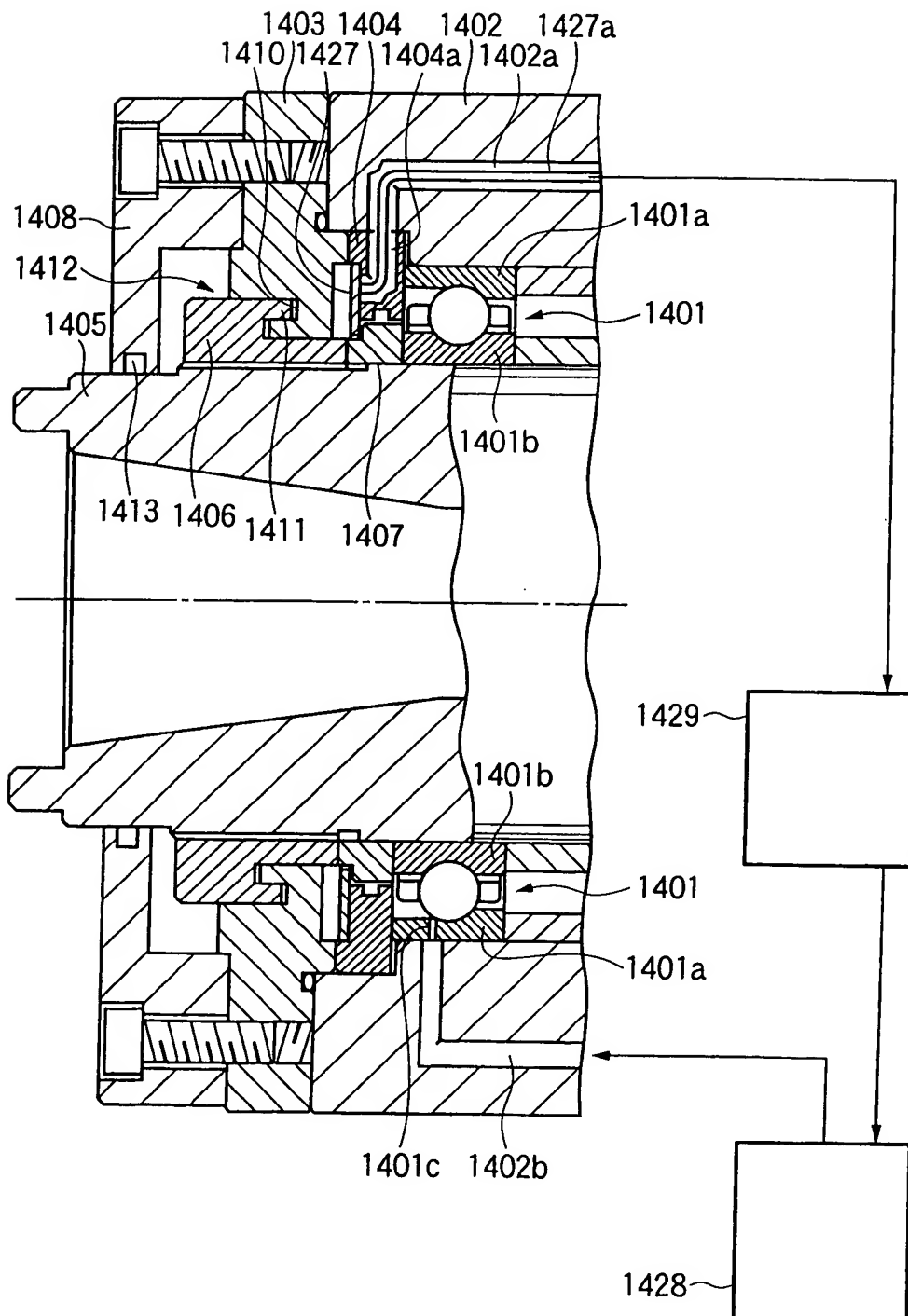


FIG. 100

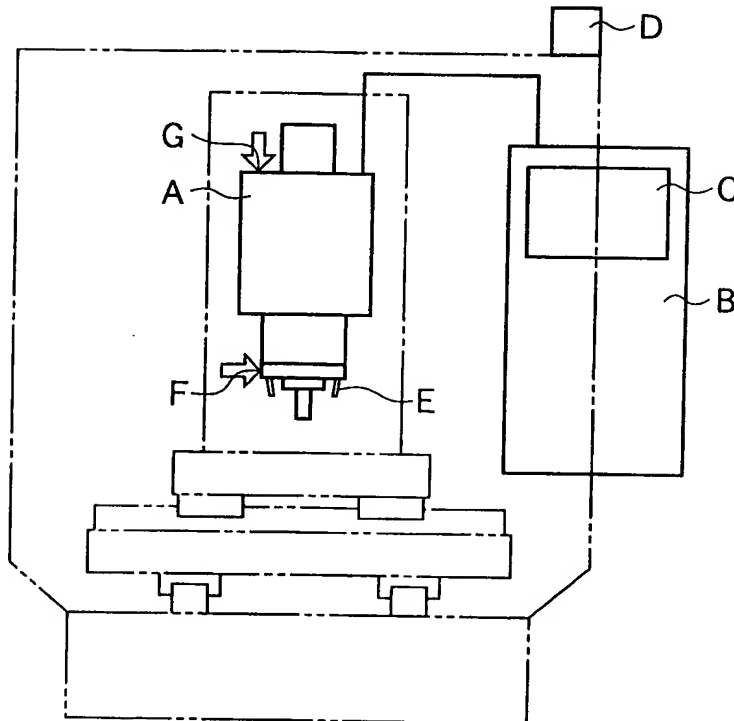


FIG. 101

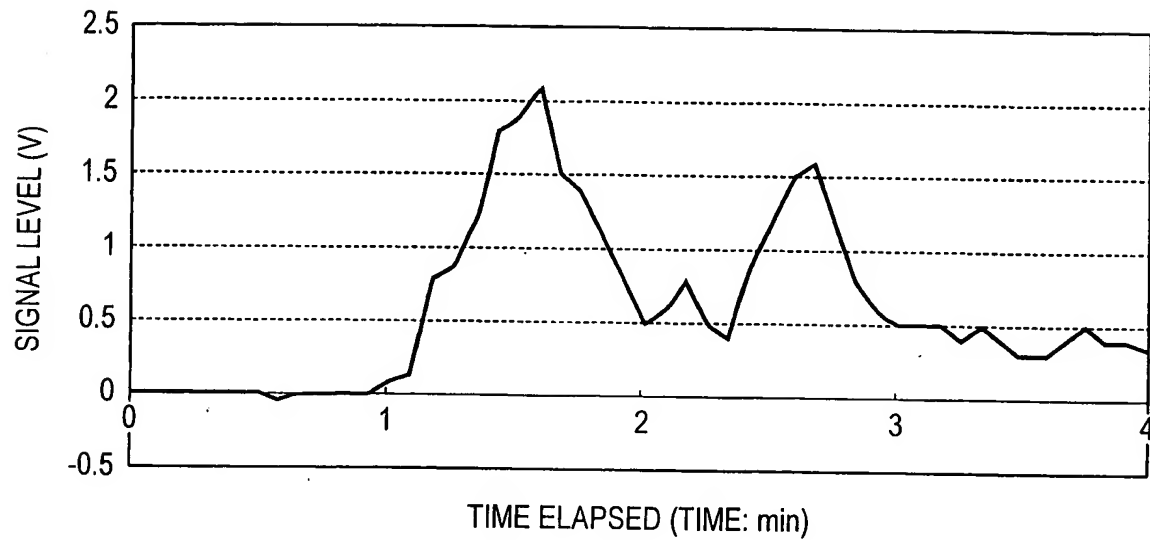


FIG. 102

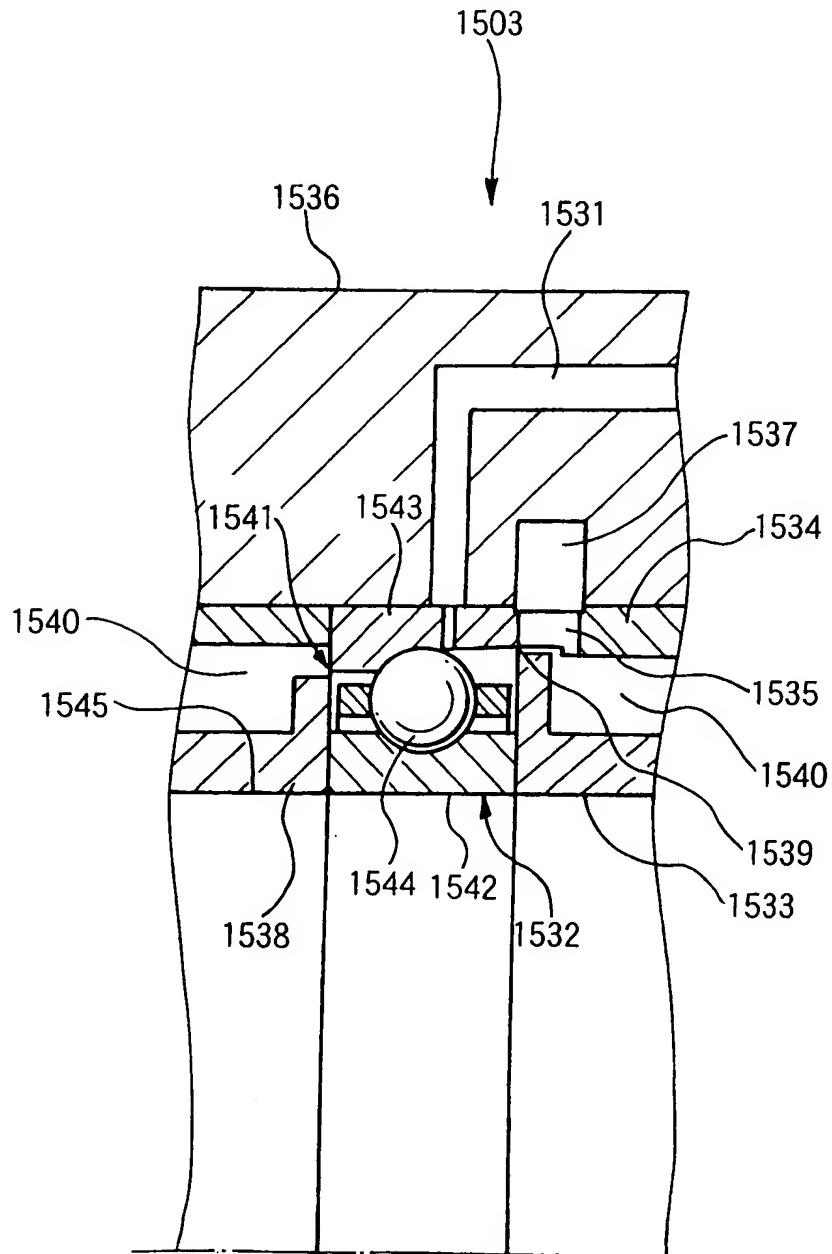


FIG. 103 (a)

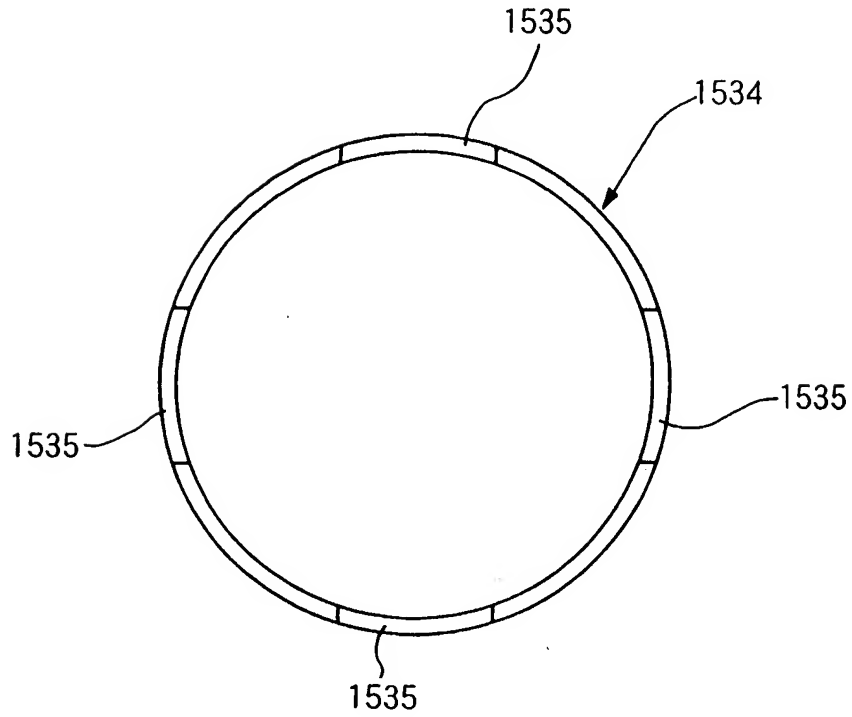


FIG. 103 (b)

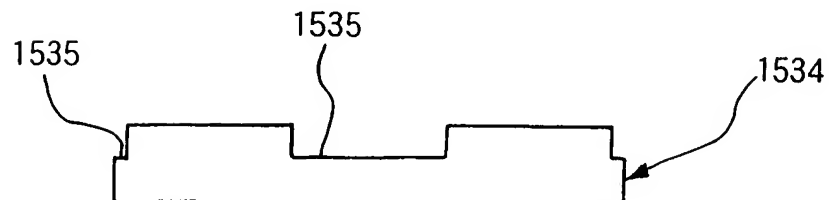


FIG. 104

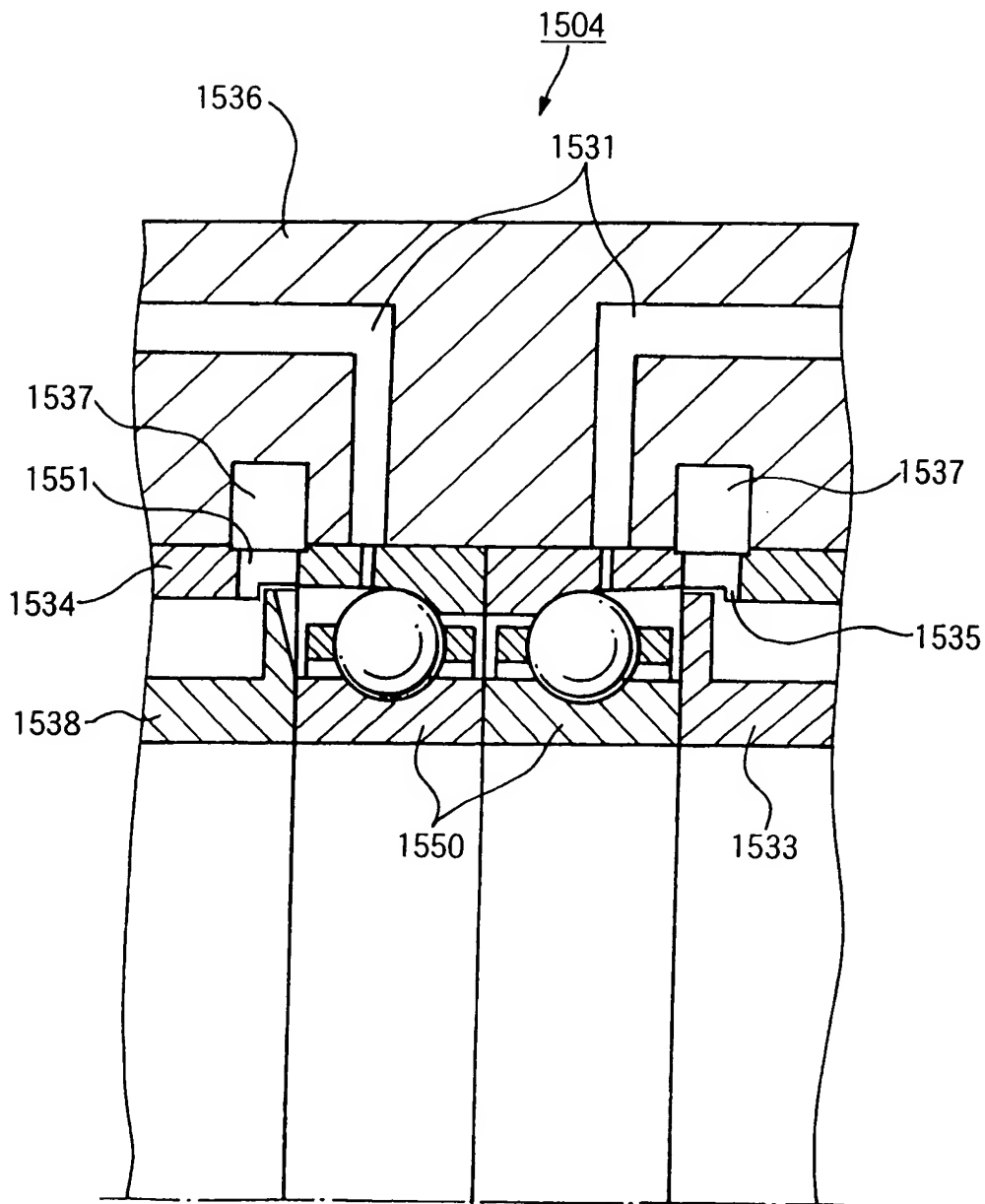


FIG. 105 (a)

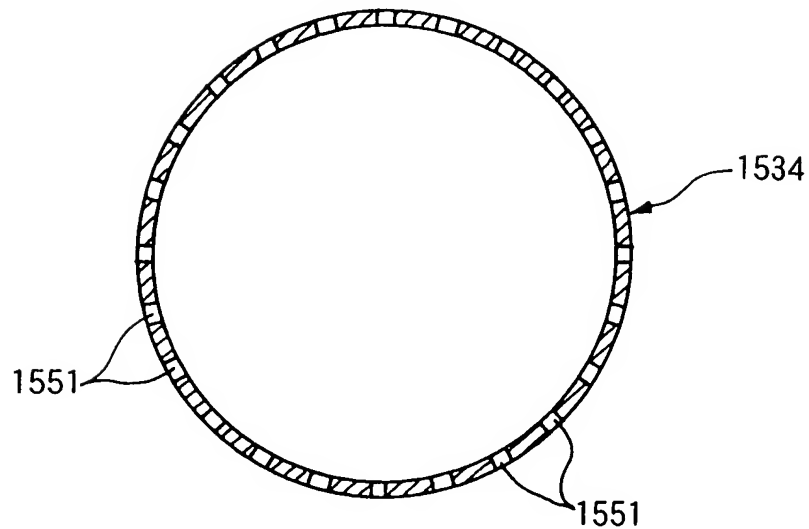


FIG. 105 (b)

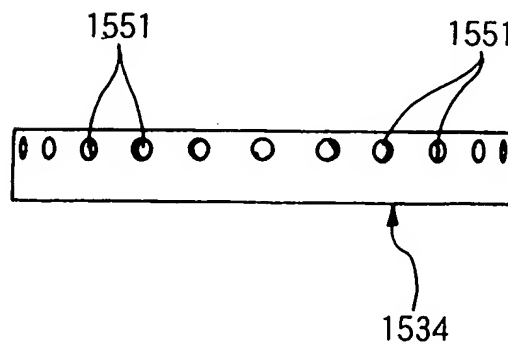


FIG. 106

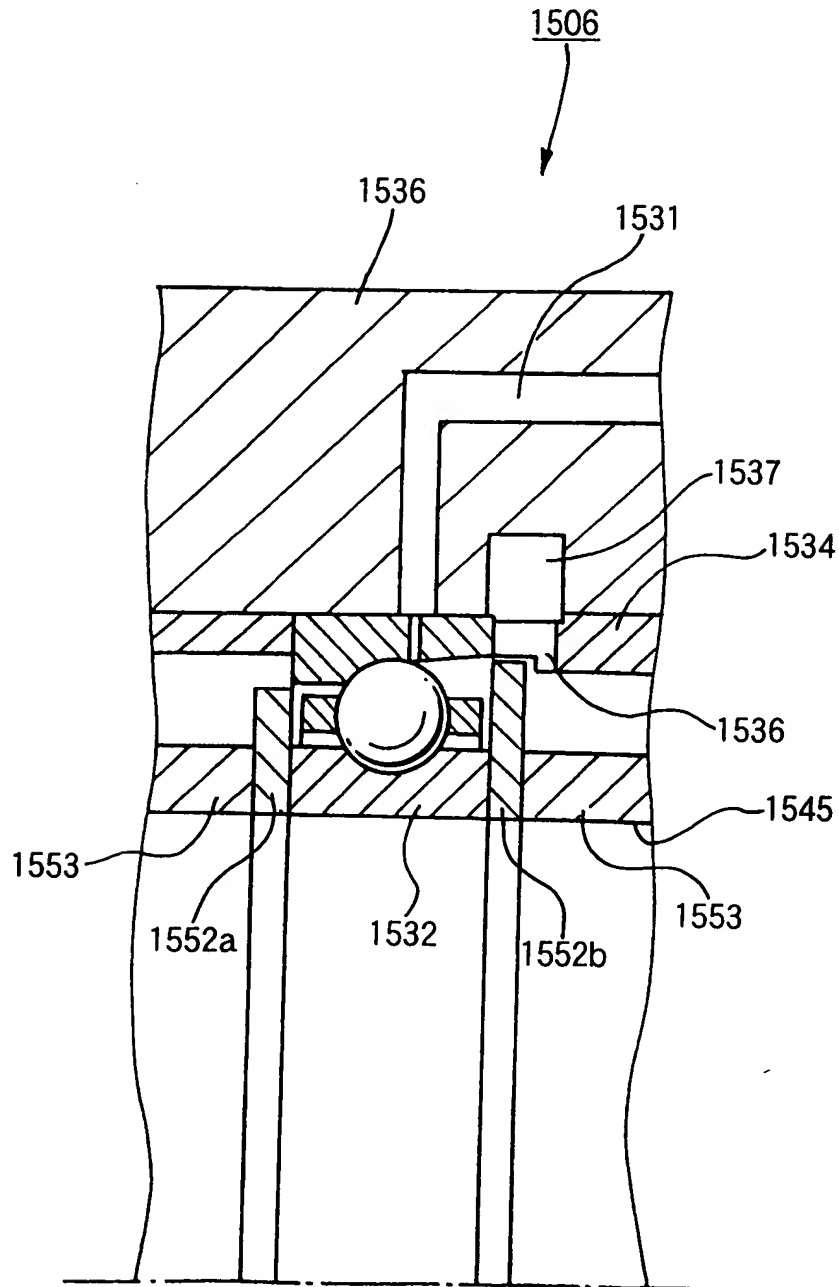


FIG. 107

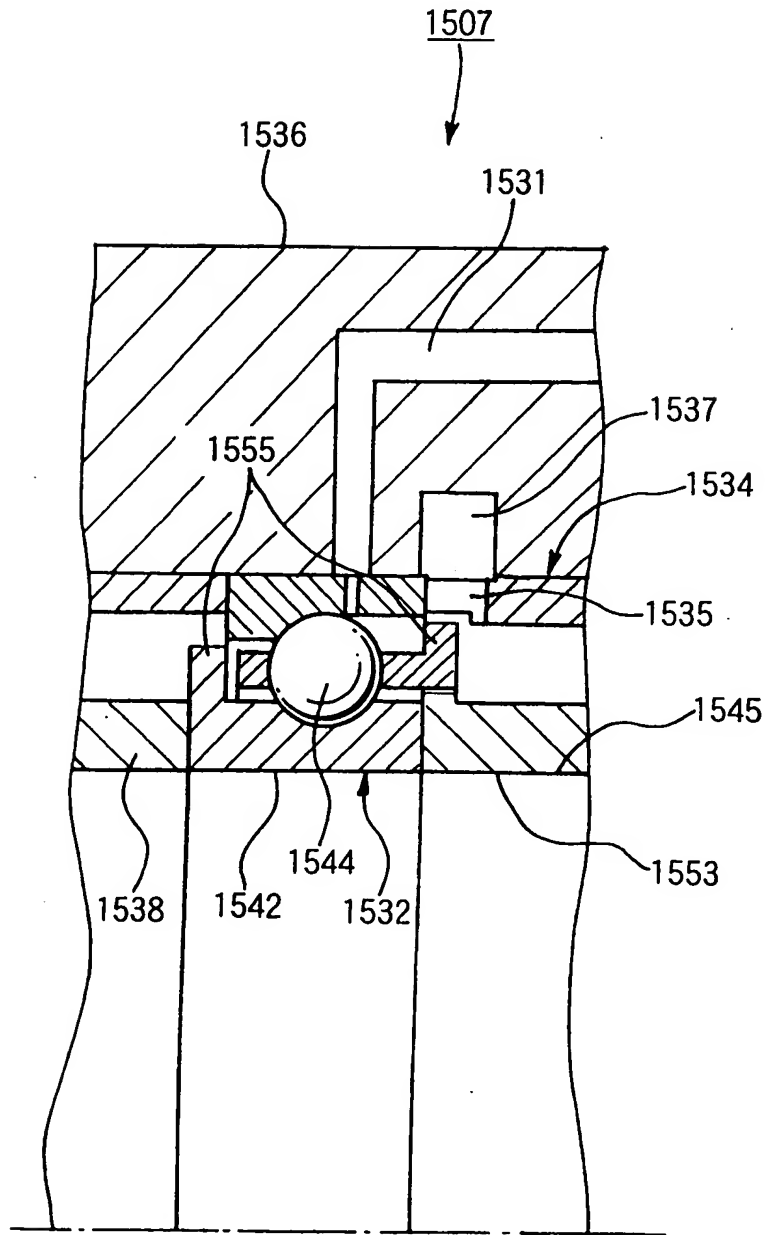


FIG. 108

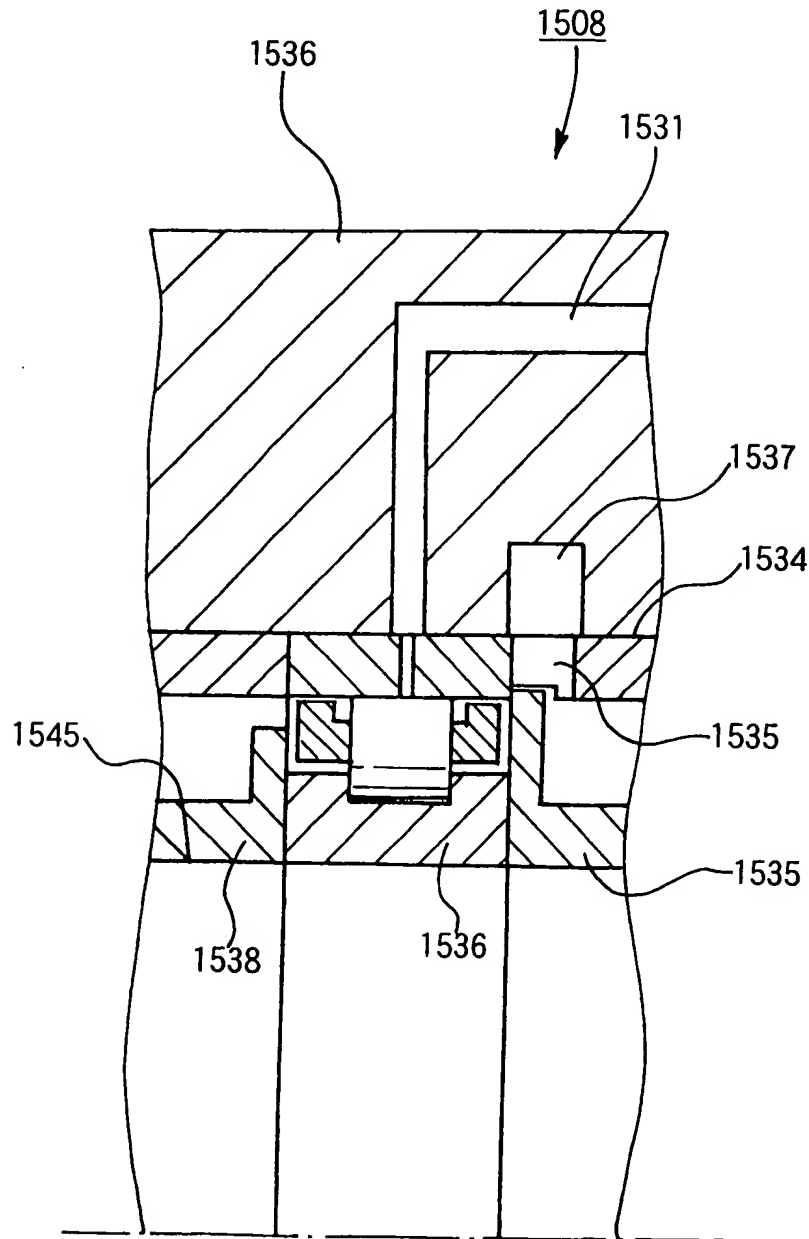


FIG. 109

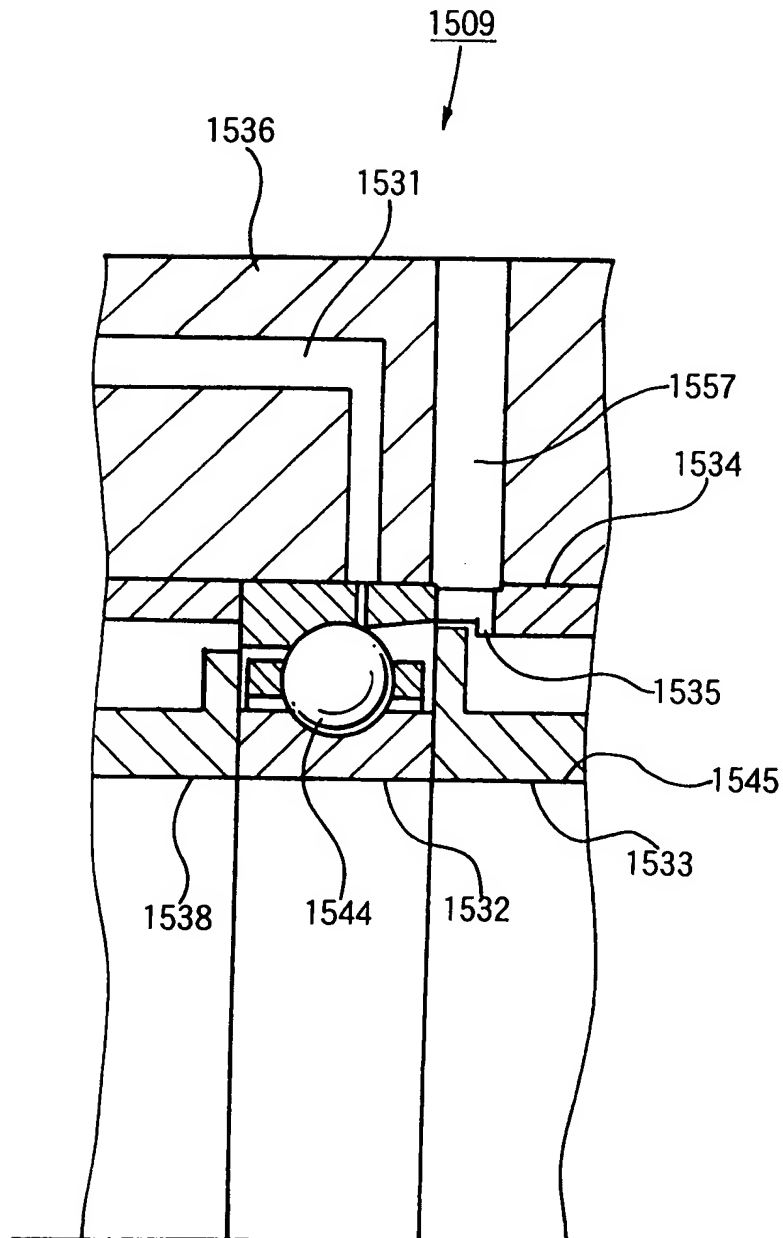


FIG. 110

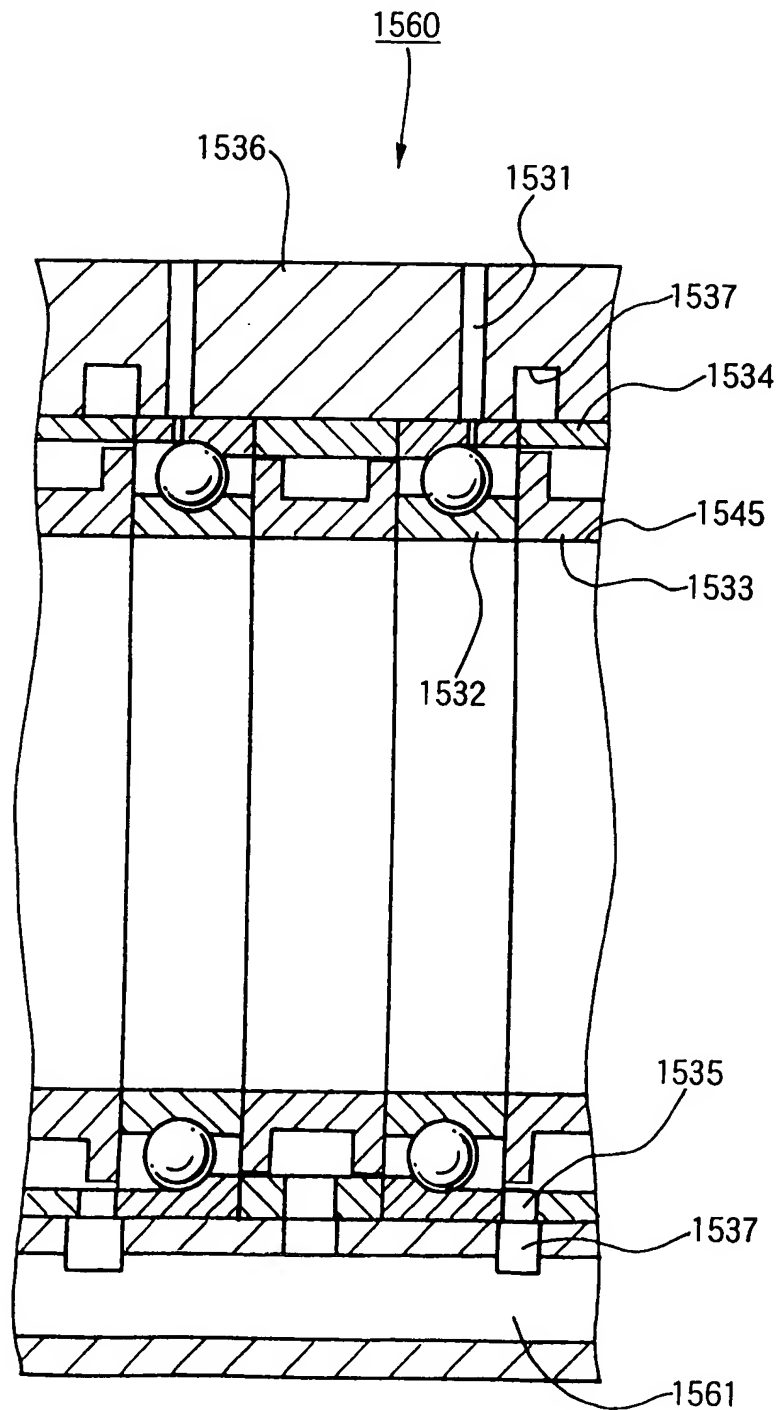


FIG. 111

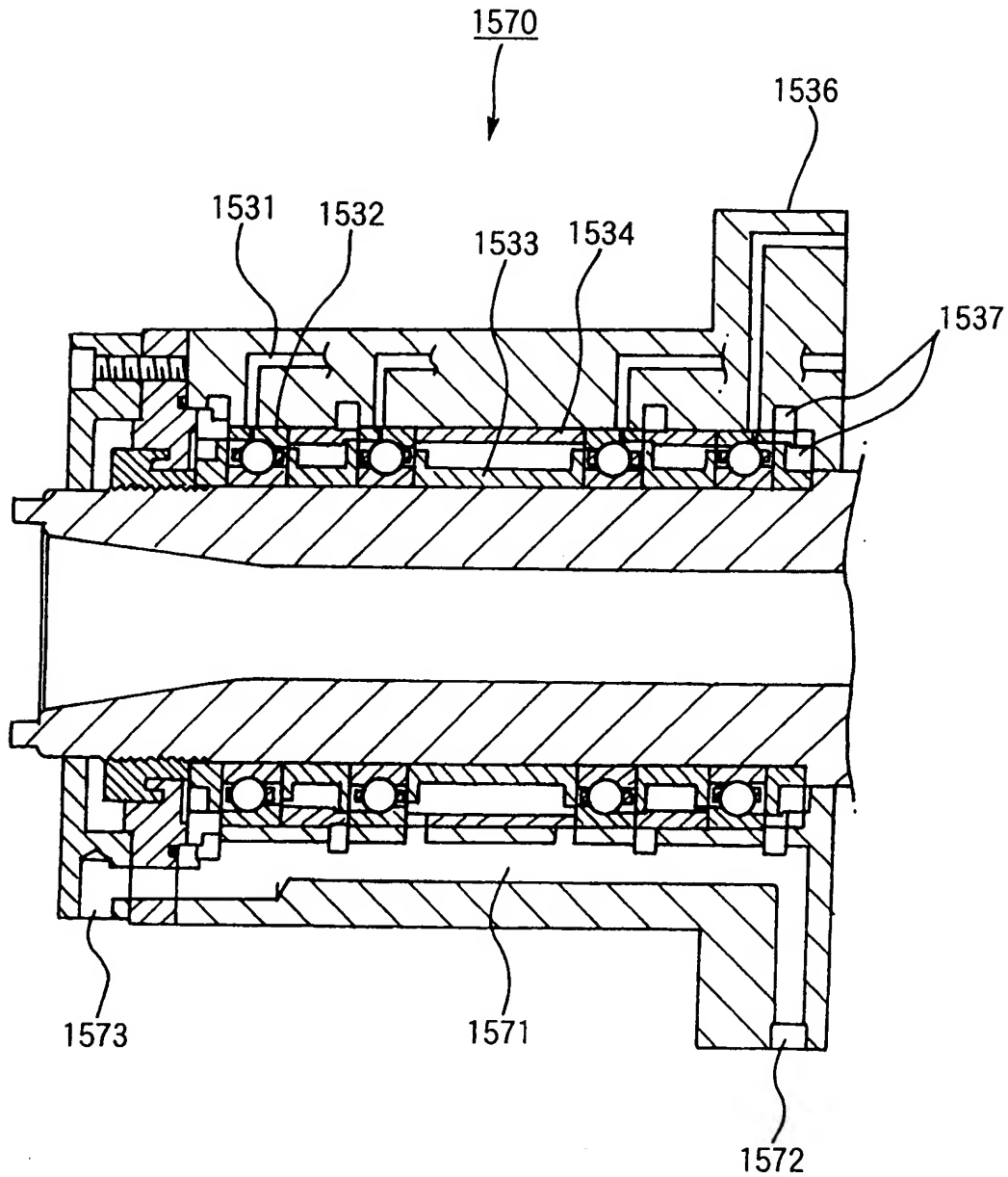


FIG. 112 (a)

	PRIOR ART	PRESENT INVENTION
CONTINUOUS OPERATION TIME	ABNORMAL TEMPERATURE RISE IN 45 HOURS	NO ABNORMAL TEMPERATURE RISE AFTER 100 HOURS
RESIDUAL AMOUNT OF THE GREASE IN THE BEARING	REMAINED BY 70% OF THE BEARING SPACE VOLUME	REMAINED BY 30 TO 40% OF THE BEARING SPACE VOLUME

FIG. 112 (b)

TEST CONDITIONS

INNER DIAMETER OF THE BEARING	65mm
THE NUMBER OF ROTATION OF THE SPINDLE	20000rpm
TEST TIME	100 HOURS
LUBRICANT	LUBRICANT: GREASE INITIALLY SEALED AMOUNT: 15% OF THE BEARING SPACE VOLUME
	SUPPLY AMOUNT: 0.02cc/7.5min (PER BEARING)

FIG. 113

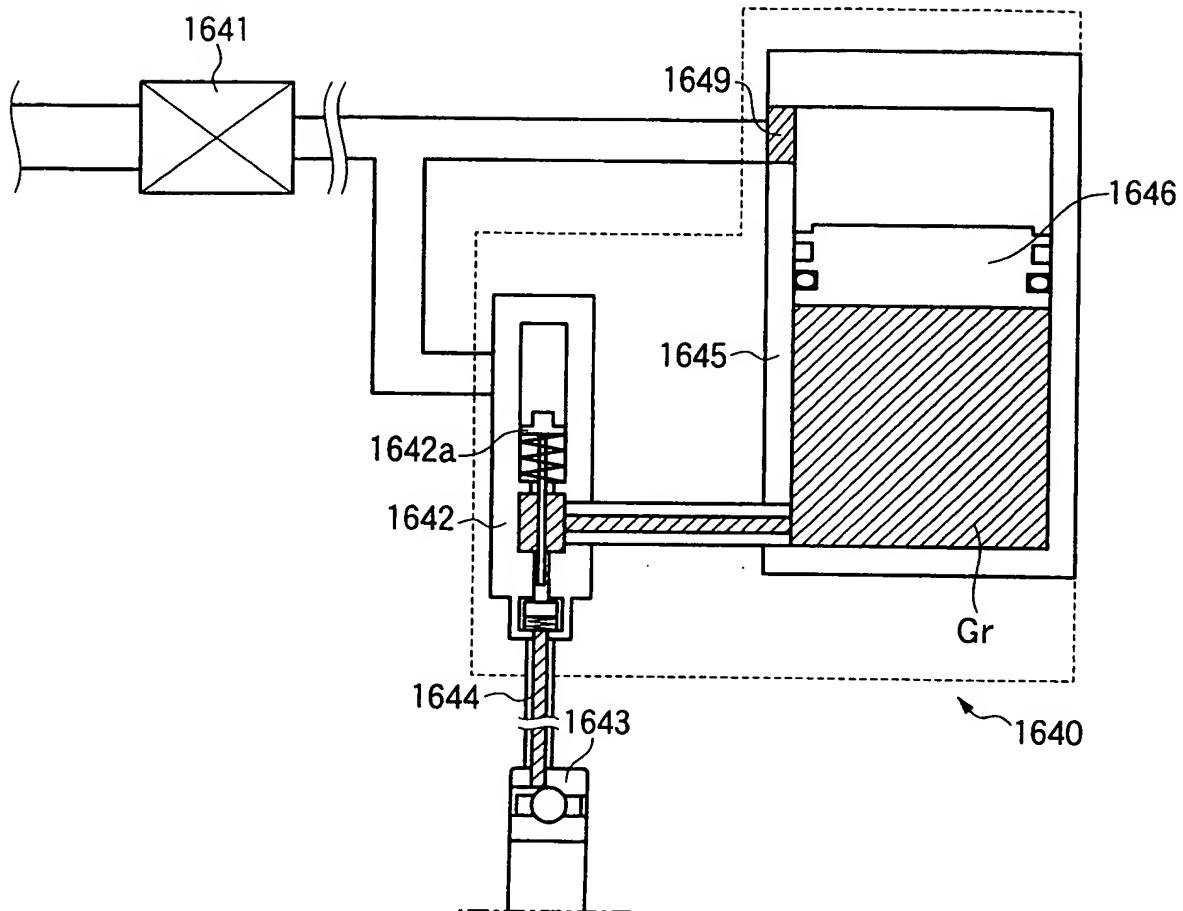


FIG. 114

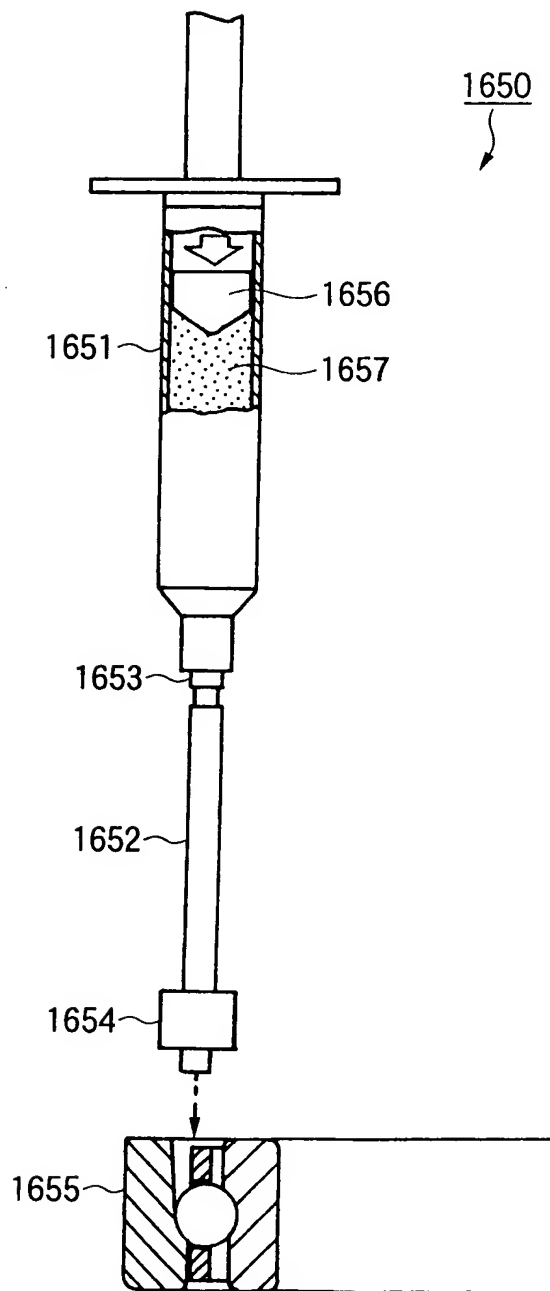


FIG. 115

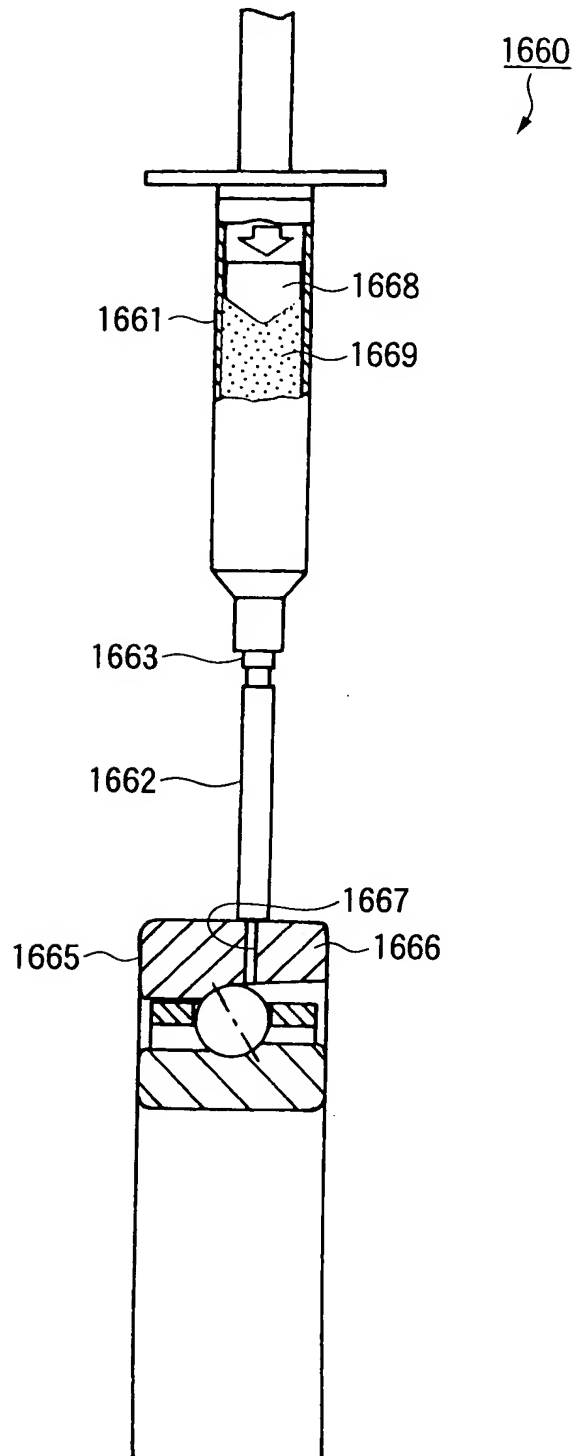


FIG. 116

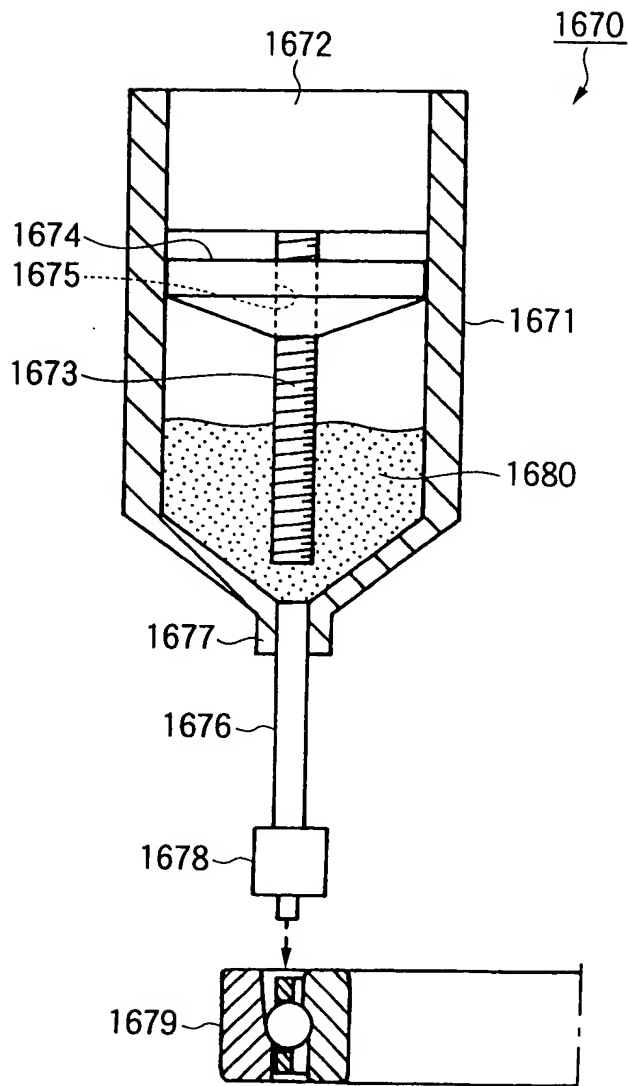


FIG. 117 (a)

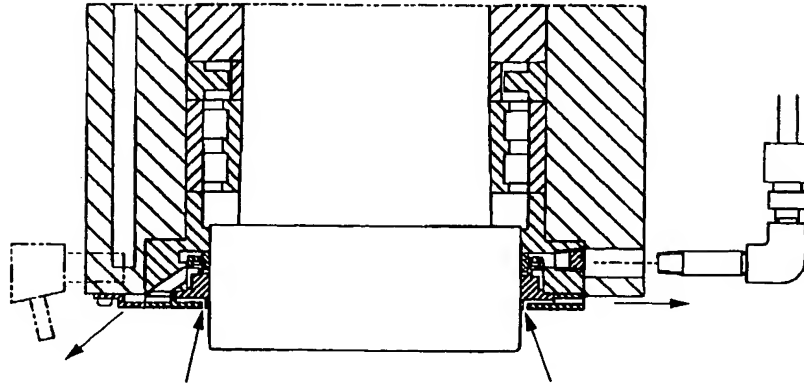


FIG. 117 (b)

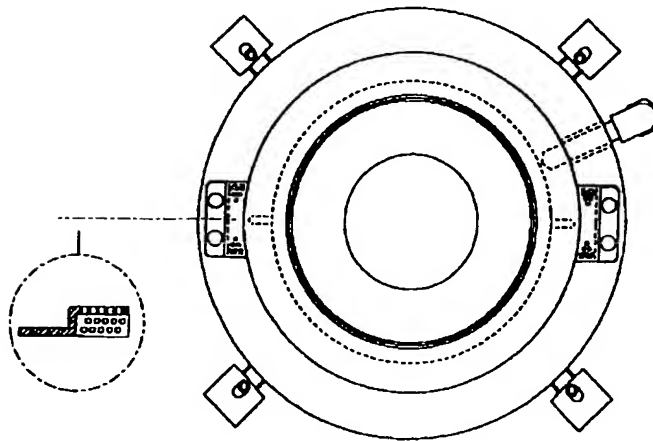


FIG. 118 (a)

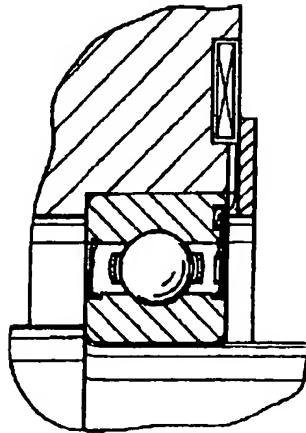


FIG. 118 (b)

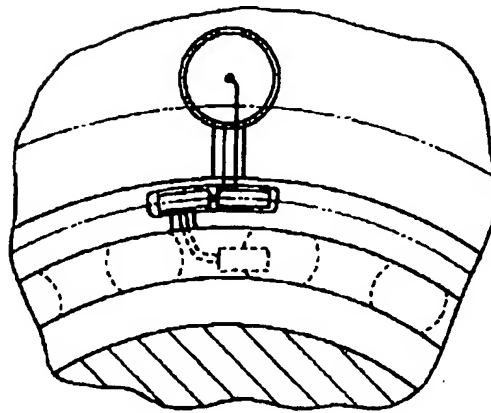


FIG. 119

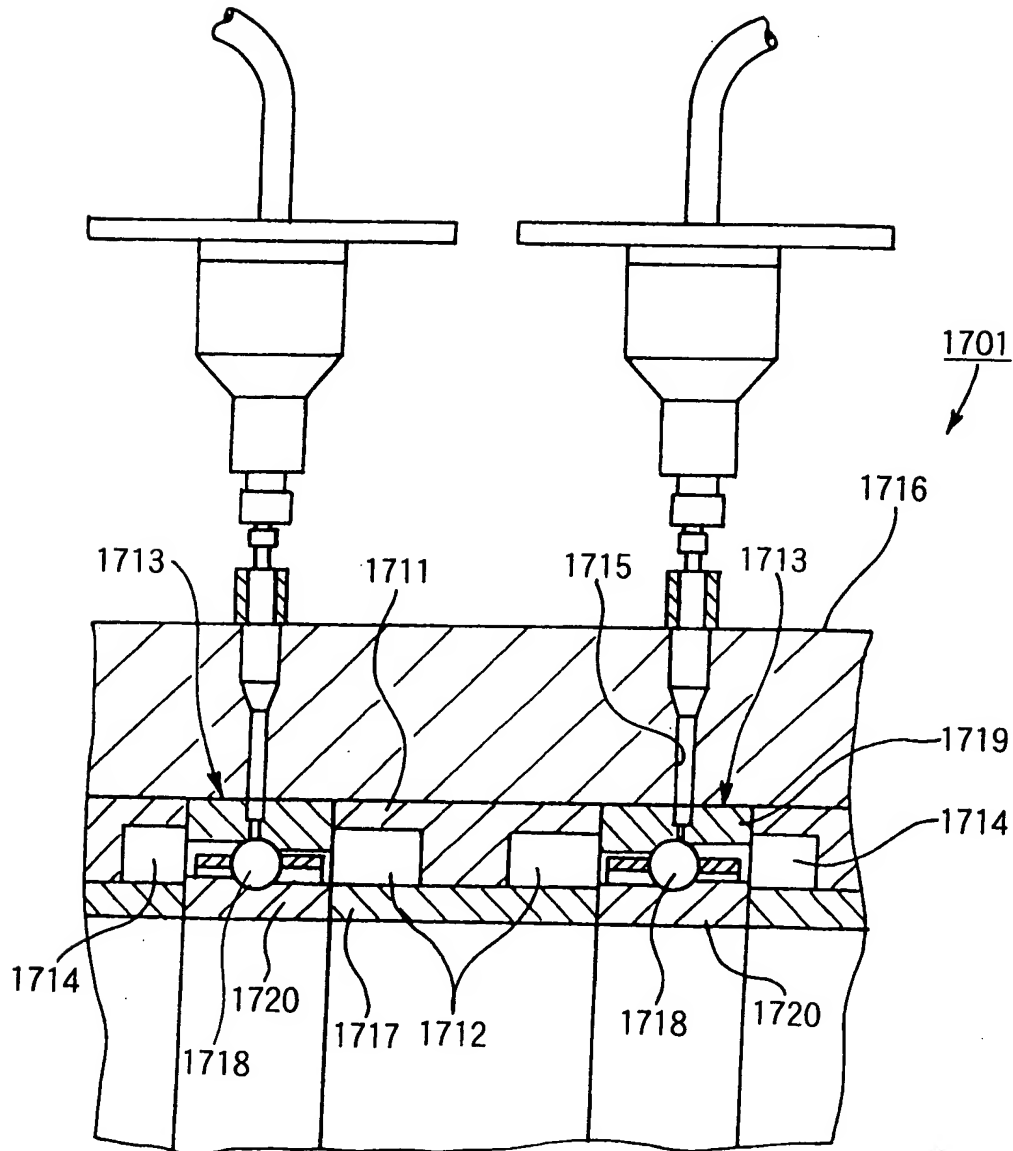
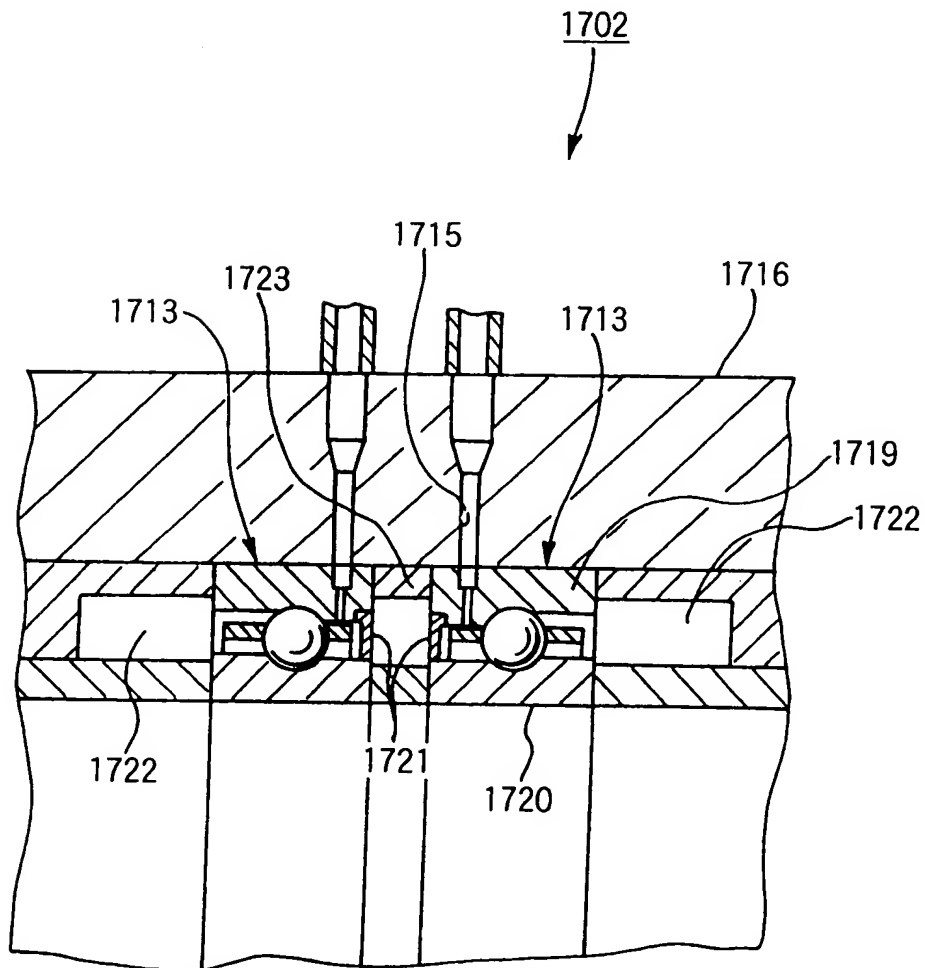


FIG. 120



A cross-sectional view of a mechanical assembly 1750. The assembly includes a top block 1751 with a central vertical hole 1754. Below this block is a middle block 1753 which contains a circular component 1755. The middle block 1753 is supported by a base 1752. A curved, lens-like component is positioned to the right of the base 1752. The entire assembly is shown in a cross-section with hatching indicating different materials.